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ACORN USER
Essential for all users of 32-bit RISC OS computers
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• DataPower 2 reviewed
• The art of ArtWorks – part 2
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March 1998




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Next month in **Acorn User**

We check out the Impact database from Circle Software and continue the view of 3D graphics for games and ArtWorks, plus all the regulars

**Next issue** on sale 19 March 1998

# 3 yr Warranty on ALL Acorn MEMORY *why Pay More??*

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State 10base2 or 10baseT

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| | |
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| | |
|---|---|
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For complete system add Monitor of your choice.

## MONITORS

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# THE BARGAIN BASEMENT

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| Impression Borders Discs 80 Chinese | £10.00 |
| Impression Borders Discs 80 Old Engl. | £10.00 |
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## Acorn Books Bargain Bin

| | |
|---|---|
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|---|---|---|
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| Panasonic PD scsi system ext | £249.00 | £292.58 |
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| FUN SCHOOL young scientist | £10.00 |
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| MS CINEMANIA 95 | | £10.00 |
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| | |
|---|---|
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All goods are guaranteed but not supplied on approval

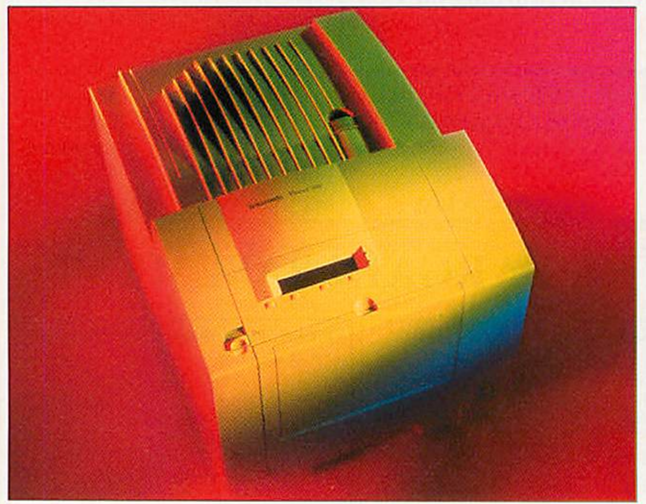


# news

## Colour is better than mono

There is a commonly held perception that colour printing is expensive, slow and complicated. Colour printing is now widely accepted, but the rule of thumb is that you need different printers for different jobs – a colour printer for colour work and a monochrome printer for ordinary black and white work. Not so, say Tektronix, who specialise in manufacturing colour printers. They have just launched their new Phaser 360 colour workgroup printer and are hoping to persuade those who hadn't thought of buying a colour printer before to think again.

For some time now, Tektronix have been giving black ink free to customers of their Phaser solid ink colour printers – a policy they recently guaranteed for life. Tektronix also say that their printer mechanism is more robust than that of conventional black and white laser printers and less complicated than that of colour laser printers.



Cheap colour liquid inkjet printers have been popular for some time now, but once again Tektronix are insistent that cheap printers are not necessarily the cheapest to use – in fact printing documents with heavy colour usage can be remarkably expensive with ordinary inkjet printers, sometimes as much as 50 pence to a pound per page. The Tektronix printers can, apparently, print full colour pages for just 34 pence a page and spot colour for a measly five pence a page.

Even though a Hewlett-Packard LaserJet 5M monochrome printer is considerably cheaper to purchase initially, Tektronix calculates that with an average use of 2,000 pages per month, which would be typical of a medium sized office, the overall cost of ownership of the LaserJet mono printer would overtake a Tektronix colour printer within two years. So, in effect, Tektronix say you get the advantages of colour for virtually nothing in the long-run. Another nice thing about Tektronix printers is that the solid ink they use is wax-based and non-toxic and, unlike laser printers, they don't emit ozone. Other bonuses of having one of their printers is that you can say goodbye to getting your colour stationery pre-printed. This can be expensive and wasteful as stocks of letterheads and compliments slips, etc. often need to be scrapped when details in addresses, logos and phone numbers change. Instead, incorporate the letterhead design into your documents as a template which can be updated any time you like.

However, there has to be a catch somewhere. Speed is often a failing of colour printers. Colour lasers need to pass a page through four times as much print mechanism as a mono laser printer, so while there are 24 page per minute (ppm) mono printers around, colour lasers are usually slower than 6ppm. Colour inkjets usually take a lot longer, especially when printing full colour pages.

Tektronix don't claim to have solved this problem completely – their fastest printer operates at 5.5 pages per minute, whether printing colour or black and white. However, Tektronix do claim they can get the first page of a document out of the printer as fast as some of the fastest mono printers, even in colour, which is an important point to consider if you print lots of one page documents, as many of us do.

In the latest Tektronix Phaser 360 a 100MHz PowerPC RISC processor ensures the PostScript Level 3 engine works at a decent rate. Tektronix printers also have a rather unique print quality. The wax-based imprint is slightly shiny, which not everyone likes. Printing solid colours in bar-charts and other diagrams is a Tektronix strong point, while colour photographs are handled well, the latest crop of high resolution liquid ink-jets from Canon and Epson are in a league of their own.

The new Tektronix Phaser 360 is priced just over £3000. The slightly slower and less sharp (800dpi versus 600dpi) alternative is the Phaser 350, which sells for around £2000. Tektronix quotes market research data which suggests buyers want colour more than ever and that mono lasers have reached their peak in sales. After all, how many of us still use mono monitors on our computers these days? Colour is here to stay.

## Acorn license Citrix thin client protocol – official

Citrix Systems, Inc. have announced officially that Acorn have signed licensing agreement for Citrix's Independent Computing Architecture (ICA) protocol standard for thin-client/server computing. *Acorn User* actually learned of the deal last November and now it has been officially confirmed. Under the agreement, Acorn will port Citrix's ICA protocol to RISC OS and its derivatives. Acorn plan to include ICA software in their existing and future Internet appliance products, including an ultra-thin device targeted toward corporate, education and small office/home office (SOHO) markets.

The ICA protocol enables non-Windows platform computers display and control Microsoft Windows applications running on a Windows NT server machine which is also running the Citrix WinFrame server application. An Ovum market-research report recently gave the thumbs-up to this thin client architecture as a potentially big development in the evolution of Microsoft *Windows* in business environments. The big advantages are that administration is conveniently centred around the server – installing a new application, for example, only needs to be done once rather than on dozens or even hundreds of machines – while the client machines don't need to be big, expensive and insecure PCs.

You can use something like an Acorn NC instead. Citrix were on to such a good thing that Microsoft promptly went and developed a rival solution called Hydra, however, Citrix has the head start and Microsoft have delayed their Hydra project.



# Panasonic and Hitachi hint at DVD RAM launch




Panasonic have officially announced that they will launch their first DVD RAM (rewritable digital versatile/video disc) drive at the forthcoming CeBIT IT fair in Germany. The show takes place in mid-March and Hitachi have also hinted that they will follow Panasonic's examples.

At press time we were unable to get any hint as to how much these exciting new drives will cost. DVD RAM drives will initially be able to accept CD-sized discs which can store up to 2.5Gb per side. 15Gb second-generation DVD discs will be available in a couple of years time. A Japanese technical representative from Panasonic told *Acorn User* that the DVD RAM standard was superior in all ways to the rival DVD+RW standard being promoted by Sony and others.

However, besides potential confusion between DVD+RW and DVD RAM, there is another problem – for the time being, DVD ROM (read only) drives, which are already on sale, cannot read DVD RAM discs. The technology remains in flux and it is unlikely that the standards will have settled down until late in the year. If you can wait until then, you would be wise.

# Are modems and ISDN obsolete?

Chip giant Texas Instruments have just launched a major initiative to claim the lead in a new technology which promises to revolutionise computer communications. The company are preparing for the advent of ADSL (asynchronous digital subscriber line), a technology which can deliver data over ordinary phone lines at speeds of up to 8 megabits per second.

That's some 150 times faster than the fastest 56K dial up modems and, what's more, while you are jet-surfing the Internet or watching a video-on-demand movie you will still be able to use the same single phone line to make and receive ordinary phone calls. Even ISDN, or digital phone lines, which are 'only' 3-4 times faster than analogue modems, are eclipsed by ADSL.

Texas Instruments say BT are committed to installing ADSL in UK homes and businesses this year as part of a large scale trial of the technology. In fact BT have been an advocate of ADSL technology for several years and hope to be able to become a content broadcaster, providing video-on-demand services to rival cable TV and satellite services.

ADSL could have been a critical boost for Acorn's now defunct Online Media division as their digital interactive TV set-top boxes would have been ideal for this kind of application. However, ADSL technology has only really settled down into a widely recognised standard recently. The standard which looks like winning is called Discrete-Multi-Tone (DMT), which – crudely speaking – is like having 256 modems at different frequencies all working in parallel. Noise and interference is dynamically filtered by suspending any of the 256 data channels as necessary.

Texas Instruments are confident that the majority of users will be able to enjoy the full speed benefits of ADSL at 8 megabits download speed and 800 kilobits upload speed. Others, who may have less than perfect phone lines, might only get half this performance, but that's still an order of magnitude better than an ordinary modem. Plus, no dialling and waiting around for connections is necessary with ADSL – in fact, in theory you could be connected to the Internet for 24 hours.

ADSL will revive interest in video-on-demand services and enable high-quality video telephony as well as dramatically speed up Internet access. The only unanswered variables left are when will it be generally available and how much will we be charged for it?

# New from X developments

X Developments have released four new products recently, including *QuickData* (a database/information manager), *Accounts+* (an accounting package with Job Costing etc.), *OSMClient* (an expense manager compatible with the new MacOS accounting package, *Simplicity*), and *ArtScape* (a creator of simple 'books' for toddlers and special needs use). *QuickData* and *Accounts+* are £25 each, or £40 for both, when bought together. *OSMClient* is £5 pounds, which includes *DropCaps*, for free. *ArtScape* is £10.

X Developments have also requested us to ask *Acorn User* readers if there is any demand for producing a high-power finance package for the Acorn market, featuring Stock Handling etc. Is there a market left in the wake of *Prophet*, they ask? You can contact X Developments at: 18 Park Avenue, Wrexham, LL12 7AH, North Wales. Tel: 01978 24929, e-mail: xeev@netmatters.co.uk, WWW: http://users.netmatters.co.uk/xeev

# PCB designer software updated

The printed circuit board designer program, *!RiscPCB* Version 0.28, is now available and can be downloaded via the Web at http://www.idealist.demon.co.uk/ The file is in Archive format. Compared to the previous version 0.01, printing is very much faster and can be in colour too, there is a *!Draw* file format export option, drill sizes can be allocated to pads, cords can be absolute or relative to last position, tracks can be locked to 45 degree angles, zoom to percentage rather than just in or out and a preference file can now be saved.





# Teac ships 32X CD ROM drive

Hands-up those who used to dream about owning a 4X CD-ROM drive (any CD-ROM drive for that matter!), but were thwarted by the cost? Thumbing through old issues of *Acorn User* you can spot adverts for 1X speed drives less than four years ago for a staggering £219. And then Teac come along and announce a CD-ROM drive which can transfer more data in one second than its ancestors could in half a minute and charge less than a hundred quid for it.




Teac's new CD532E drive, for IDE controllers, has a maximum rating of 32X and is priced at just £75 plus VAT. A retail kit, including a PC interface card, cables and non-technical installation guide adds £7 to the overall price. A SCSI version (without interface), the CD532S, is available for £89 plus VAT and these are Teac prices, so street prices could be even lower.

The Teac design is a CAV (constant angular velocity) type, so the CD always spins at the same speed. This means data read from tracks at the centre of the CD is collected at the rate of 2 megabytes per second (13.8X speed) while date the rate at the outer edge of the CD is at its maximum of 4.8 megabytes per second (32X speed). Considering the poor CD inside the drive is spun 32 times faster than it was ever intended to, special attention needs to be addressed to reduce vibration and noise. Teac say they have done exactly this and also optimised the design to reduce processor load.

# Acorn plays their Trump card

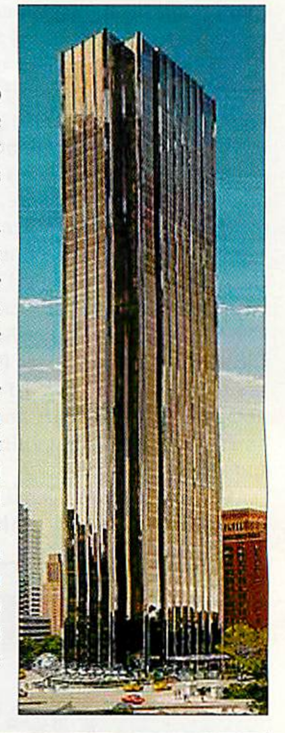
Acorn have announced they are to supply set-top boxes for a pilot video-on-demand service to be offered to guests staying at the Trump Tower hotel in New York. Acorn is described as the 'partner of choice' in the high technology arena and has formed a strategic alliance with FreelinQ Communications Inc. to provide set-top boxes for the free-of-charge advertiser supported video-on-demand service.

Residents who sign up for the scheme will receive two interactive advertisements of approximately 30 seconds in length prior to the beginning of each selection. Demographic information about the viewer collected at the check-in desk will be used to target the most relevant adverts to that specific guest.




In return viewers will be able to choose from over 600 hours of rotating programmes that will air without interruption. In addition, computer owners will be offered Internet access service at speeds of 1.5 megabits per second. The set-top boxes provided by Acorn feature TVCentric technology developed by Acorn for optimising computer displays for TV screens.

FreelinQ Communications Inc. president Maury DiDomenico commented: "When looking to source partners for the Trump Tower programme we wanted to work with the best in their respective fields. Acorn are well-known as technological innovators, and their set-top box is second-to-none." Kevin Coleman, head of communications at Acorn, adds: "This is a real step forward for us. Being recognised as a world leader in the STB field is always gratifying and having our equipment used in a project of this prestige is the icing on the cake. We look forward to being a part of FreelinQ's Communications Inc.'s expansion on a world-wide basis."



# The Doom is here at last

By the time this story reaches you, the official port of the mega game, *Doom*, should have appeared on sale for the first time for Risc PC users. An 'unofficial' Acorn version of the game has been widely distributed for some time, but R-Comp Interactive's Andrew Rawnsley said that the licensed version was set for release at the Acorn Southwest show in Bristol on 7 February.

This is the first stage of a new initiative by R-Comp Interactive (RCI) to support the Acorn leisure market. RCI has formed a new division dedicated to publishing new and converted titles. They have also taken on the marketing of ProAction titles. Rawnsley promises this will lead to a range of top quality Acorn leisure titles appearing over the next 12 months, including several PC titles to be released for RISC OS at the same time as the PC original. Needless to say, the success of the *Doom* port will dictate the force of RCI's new commitment to Acorn games. Apparently, the official *Doom* port is a considerable improvement over the pirated version which has been doing the rounds, so with luck RCI will be on to a winner.

RCI can be contacted via e-mail at: doom@rcomp.co.uk, tel: 01925 755943, fax: 01925 757377.



# news

## Series 5 desk rest



Knebworth-based Widget Software, a long time specialist in palmtop computers and the Psion family in particular, have just announced a desk stand for the newest Psion member – the Series 5. The rest folds out so it can be conveniently carried with you. It also has a non-slip base.

Widget say some 30,000 of their Psion desk stands have been sold to date. The Series 3 model is, of course, ideal for Acorn Pocket Books.

Widget Software, tel: 01438 815 444, e-mail: info@widget.co.uk

## Ian Copestake Ltd

It is with regret that we have to bring news that as of the of 21 January 1998, Ian Copestake Ltd have ceased trading and officially entered into voluntary liquidation. Ian Copestake told *Acorn User* that he was very sad about the situation but he also added that he would like to thank his many former customers and well-wishers.

According to Copestake, few customers were left with the goods or money owed. The company had progressively reduced their staff in recent times and only one person was effectively made redundant when trading ceased. Progressively tougher trading conditions, especially a poor Christmas last year, plus other unnamed factors were the cause of his company's downfall, according to Copestake. "For example, the new game *Exodus* arrived about a month too late. We sold around a couple of hundred copies but it wasn't enough. I was really relying on a strong Christmas to get things going again."

The company's own-brand IDE interface cards and software will continue to be sold through new outlets, with APDL, of public domain software fame being a strong candidate. Meanwhile, Ian Copestake tells us that this may not be the last we see of the him – he is investigating possible new business opportunities in the Acorn market.

The meeting of creditors was scheduled to take place on 6 February 1998 at the offices of Jacksons Corporate Recovery & Insolvency, (tel: 01704 501074, fax 01704 548400).

## ARMed and ready for CE?

Digital Equipment have made the most noise about ARM and Windows CE through their StrongARM developments, but now ARM Ltd are developing a cached microprocessor core based on their ARM7TDMI chip to support the next release of Windows CE.

The new core design is called ARM720 and is optimised specifically for CE. The main enhancements are in the area of caching and memory management and were dictated by detailed CE architecture blueprints from Microsoft. ARM's TDMI technology, also known as 'Thumb', stores 32-bit instructions in 16-bit format to save expensive memory resources in cost-sensitive applications.

The new ARM720TDMI core is also likely to form the basis for a ARM9 generation processor for CE applications and this should see a doubling in performance. However, there has been some press comment denigrating ARM's prospects in the CE marketplace because of a perceived lack of horsepower. The current leaders in the Windows CE processor stakes are MIPS and Hitachi.

One press comment suggested that if Intel weren't careful, their long-term Windows lead could be seriously threatened by MIPS and the RISC chip family. Of course, Intel are being handed the responsibility of looking after StrongARM and the same old question arises – will Intel invest in StrongARM to see off the MIPS and Hitachi threat or will they discard StrongARM as irrelevant to the grand Intel plan?

## Acorn gets personal over Java

Sun Microsystems have revealed that Acorn are among the first licensees of a new version of Java, called PersonalJava. PersonalJava is a subset of Java built specifically for dedicated devices like Web phones, set-top boxes, and handheld data-entry terminals.

Licensees so far include real-time operating system makers such as Microware, Wind River Systems and Lucent, as well as Texas Instruments and QNX. PersonalJava has the same Java virtual machine as the regular Java platform but has a different event model for alternate input devices and a smaller memory footprint, said a Sun spokesman.

## ARM chip to spoil Star Trek viewing?

VLSI Technology Inc., the company which has a minority share holding with Acorn and Apple in ARM Ltd, have designed an ARM-based security chip to be used in Divx DVD players. DVD (digital versatile/video disc) is the successor to CDs, CD-ROM and laser discs, initially able to contain 4-5 times as much data on one side of a disc the same size as a CD.

Divx DVD players containing the new VLSI ARM chip will be produced by Matsushita, Thomson and LG Zenith and will go on sale in the US this coming summer. Divx is a proprietary DVD system, designed by Circuit City Stores Inc. and a Los Angeles-based entertainment-law firm offering special encrypted movie discs for on-demand, pay-per-view DVD rental.

The Divx DVD players play all standard DVD discs, but encrypted Divx rental discs cannot be played on standard DVD players.

Paramount, the movie and TV company which, incidentally, brings you the Star Trek family of TV series, is rumoured to be committed to the Divx security system – bad news for Trekkers who might feel their view option seriously limited by Divx.



# news

## Wakefield show gathers pace

Some 50 exhibitors had already signed up for this year's Spring Wakefield Acorn show by the end of January, which is being held on 16 and 17 May.

The show takes place very close to the time Acorn have been hoping that the new Risc PC II will be ready to ship. Acorn will, of course, have a large stand at the show and the likes of Acorn's Peter Bondar and Chris Cox will be performing in the show theatre as usual. They will be joined by David Jackson of Clares and others. A Charity Stall will also be there jointly run by NCS and Wakefield User Group, who are organising the show.

They will also be operating a help desk to solve problems and answer questions on a combined *Acorn User*/Wakefield User Group stand area. For more up-to-date information, point your browser at: http://www.cybervillage.co.uk/acorn/wakefield/show98.html

## Is your computer covered?

It's not a new subject, but are you sure your computer is insured? Some household policies won't cover computers because of their expense and vulnerability to theft. Portable computers may not be covered by an all-risks agreement so they could be uninsured the moment you go out the front door.

There are many good policies which do cover computers, however, if you want specialist cover, Complete Computer Cover (CCC) claims to be the UK's most successful specialist all-risks computer insurance policy, covering both theft and accidental damage. Their press release says no excess is payable on any claim, authorisation to fund a replacement computer in the event of a claim is usually processed within 24 hours and no additional security arrangements are required.

CCC is underwritten by Royal & Sun Alliance and was developed and marketed by Summit Insurance Services. Since their launch in August 1996 they have insured over £30 million of equipment and have over 9,000 customers. We're not recommending them, but they certainly seem well worth a look.

For more information, tel: 0171-614 0000, fax: 0171-614 0055, e-mail: dmilnerscf@msn.com

## Acorn clamps down on Internet name

An offer of e-mail and Web addresses using the domain name acorn.org.uk by James Sears was quickly challenged by Acorn recently. Sears had registered the domain name and offered anyone e-mail and Web addresses using the domain name from just a tenner a year, e.g. bob.smith @acorn.org.uk. He also offered free space on ftp.acorn.org.uk for Acorn freeware developers to use to distribute their software. However, Acorn moved very quickly to stop Sears' initiative, citing the confusion which would be caused between official Acorn corporate Internet activity and Sears' unassociated activities.

Happily, Sears had indicated from the start that if Acorn objected, he would give up the offer and so he has.

Meanwhile, Acorn – like many other companies everywhere – are pondering how best to preserve their name and trademark on the Internet. James Sears still has the acorn.org.uk domain name and can be contacted via http://www.acorn.org.uk/

## New products/upgrades

| Product | New features/product details | Price | Contact |
|---|---|---|---|
| Solo MIDI Interface | * Price reduced * Fully usable on A7000s and Risc PCs, limited to out on A30x0, 4000s, 5000s and A4s | Was £89 Now £58 (inc VAT) | QTec Tel: 01429 890800 WWW: http:www.q-tec.demon.co.uk |
| Karelia 2 MIDI application | * Facilities to edit functions of the GM, GS and XG sound sets | | QTec As above |
| PC Dominator joystick enhancement | * For use with PCJoy * Includes thumbwheel control of rudder and throttle * Now ideal for use with PC card flight simulators | Price now £31.95. Special offer – PCJoy plus joystick for £69.90 | Stuart Tyrrell Developments Tel: 0976 255256 (Orange) E-mail: info@stdevel.demon.co.uk WWW: http://www.stdevel.demon.co.uk |
| HardCash additions | * Now 3 versions of this payroll package * Junior (Basic payroll calculation), Advanced (original HardCash 50), Professional is the Advanced version plus extras inc unlimited employees and user defined companies, auto warning of statutory holidays, warning and tracking of floating hols and more | Junior: £49 Advanced £99 Professional £149 (All prices are incl) Updates for existing customers are the difference in price plus return of orig | RaspSoft Business Software Tel: 01274 671922 WWW: http://www.argonet.co.uk/business/s.dine (demo version on website) |
| Pack of 5 easy-to-use utility applications | * !Flatpack – Produces flat versions of 3D objects with tabs which can then be made up into the objects * !Barcode – Draws standard barcodes * !BlokMaker – Helps draw crossword templates, word ladders, word squares etc * Gridmaker – Makes table outline templates as Draw files for inclusion in DTP * !A_Cert – Certificate maker | £15 (Single) £20 (Primary site) £35 (Secondary site) Prices inclusive of postage Cheques payable to B C Battersby | BCB 11 Hubbards Road Chorleywood Herts WD3 5JL |

### Xemplar triumph at BETT'98

Xemplar, the education company equally owned by Apple and Acorn, stole the show at the BETT'98 education show in January. Xemplar featured a dramatic stand design housing their NC, Newton eMate, Acorn and Apple educational computing solution displays. The eMate struck gold at BETT '98, collecting the top prize in the Secondary Education category at this year's Educational Computing & Technology Awards, which are hosted by BETT.

Xemplar representatives described the show as the best BETT yet. While eMate got the limelight, we can expect Xemplar's Acorn-based NCs to get their turn at the Education Show which takes place later in the year.

### Philips goes for ARM

Philips Consumer have announced that they are using StrongARM to power their new IS-2630 screen phone. The device is designed to provide instant access to the Internet, e-mail, voicemail, and various messaging options. Not everyone wants a PC on their desk and the IS-2630 would seem to be an ideal replacement.

Philips have already licensed Psion's EPOC32 ARM-based operating system for future mobile phone application as well, though they also produce the Velo Windows CE palmtop which uses Hitachi proprietary RISC chip. Now Windows CE is being ported to StrongARM, the Philips circle could eventually be closed in terms of ARM-based products.

### Change of address

Irlam Instruments have moved premises. Their new address is Brunel Science Park, Brunel University, Kingston Lane, Uxbridge, Middlesex, UB8 3PQ. The tel/fax numbers are unchanged as is the address of the accounts department.

### Contacting me

You can contact the news page by writing to me Ian Burley at the usual Acorn User address or by e-mail: aunews@idg.co.uk



# graphics

## Step into the Acorn gallery

No less than three new graphic and Internet design houses, powered by Acorn hardware and RISC OS software, have announced themselves to the Graphics page this month. All three have websites with large galleries or portfolios to browse through.

Andrew Green's newish company, Article Seven, has a beautifully designed website (http://www.article7.co.uk) demonstrating what can be achieved using Risc PC both from the commissioned artwork gallery, but also the website itself, constructed entirely on Acorns (pictured right).

Article Seven doesn't just have a pretty face, it has survived six months of business in a cut-throat market and unlike many commercial design companies its rates are astonishingly low. One can reasonably conclude that despite only limited resources (their Risc PC has not even been upgraded to StrongARM) that this Acorn-based company has gained an advantage over more expensive graphics houses by using the platform.

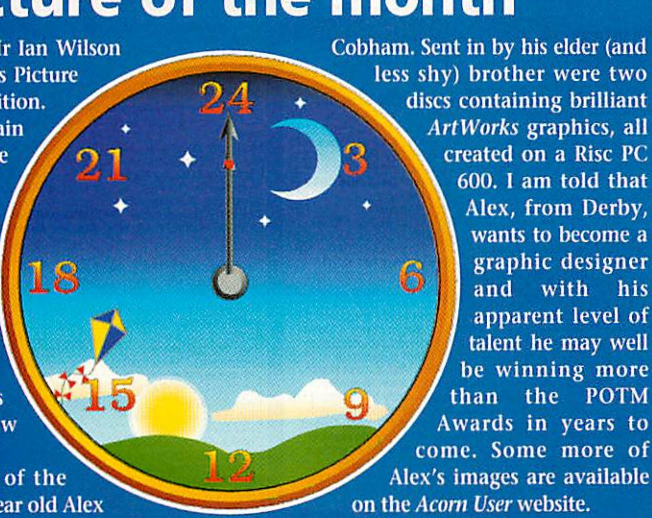
Astute Graphics is an Acorn-based company which has a very impressive portfolio of Vector artwork. You can find the site at http://www.astutegrfx.demon.co.uk The gallery is a carefully composed collage of different categories of graphic designs, each part linked to a page of gallery for that type of artwork. Astute do not exclusively use Acorns but most of the on-site graphics were generated with *ArtWorks* and stand as some of the finest examples of the package's capability that you can find.

The company is run by Nicholas 'who needs *Xara Studio*' (*Acorn User*, Feb 1998) van der Walle – a true expert of *ArtWorks*, and although the site contains a broad variety of graphics you can see the consistency in Nick's style.

Another site where the graphics carry a consistent style is Rokart (http://www.argonet.co.uk/users/rokart/). This is a simple website and the Acorn-only user, Rorie O'Keffe, who likes to use software such as *Studio24Pro*, is clearly an excellent illustrator whose art has benefited from the platform.

We would like to feature more about these and other Acorn graphics houses in the future, so anyone from part-time doodlers to full-time professionals, if you have a website let us know about it and also how the site and graphics were produced.

## Picture of the month




An apology goes to Mr Ian Wilson who won last month's Picture of the Month competition. The portrait in the main article of the page from which the winning Dot to Dot picture was derived was not of Ian as published, but of his "taller and more handsome" colleague Andrew. Perhaps an apology is also owed to Andrew therefore.

This month's Pic of the Month winner is 15 year old Alex Cobham. Sent in by his elder (and less shy) brother were two discs containing brilliant *ArtWorks* graphics, all created on a Risc PC 600. I am told that Alex, from Derby, wants to become a graphic designer and with his apparent level of talent he may well be winning more than the POTM Awards in years to come. Some more of Alex's images are available on the *Acorn User* website.

## TopModel translations

In the past people have said that the manual for the English version of *TopModel* needed translating into English. Others even argued that the interface needed translation into RISC OS. *TopModel 2* was re-translated a while ago and the current interface is excellent.

Adding to the language improvements of the package, German and Italian versions are now available with Spanish and French soon to follow. The contact addresses for the new languages can be found in the news section of the Sincronia website at http://pages.inrete.it/sincronia or via the Spacetech website, http://www.spacetech.com (Tel: 01305 822753).

### Contacting me

You can contact the graphics and DTP page by writing to me, Jack Kreindler, at *Acorn User*, Media House, Adlington Park, Macclesfield SK10 4NP,or by e-mail to augrafix@idg.co.uk.

Showroom open Mon-Sat 10-18.00 hrs (All prices INCLUDE VAT) Carriage not included

## CD-ROM Drives

Multi-Session, PhotoCD, CD-DA, White & Green Book compatible. SCSI drives require SCSI card withCDFS>2.20
**Carriage: a=£2, b=£6, c=£8**

New

**Internal CD-ROM Drives**

| | |
|---|---|
| Panasonic 24xCD **ATAPI** | £80c |
| ATAPI Cable & Fitting Kit | £10a |

Above drives are compatible with RiscPC Computers with RiscOS 3.60 or greater and all A7000 Computers.

| | |
|---|---|
| Sony 2x CD **SCSI** 275ms | £80c |
| Pioneer 12x CD **SCSI** 130ms | £Callc |

**External CD-ROM Drives** New

| | |
|---|---|
| Panasonic 24xCD **ATAPI** - suitable for Simtec IDE interface | £170c |
| Sony 2x CD **SCSI** 275ms | £135c |
| Pioneer 12x CD **SCSI** 130ms | £Callc |

## TopicART CD £10



This CD-ROM contains over 2000 ClipArt files, each in Draw, ArtWorks & CorelDraw3.0 EPS formats. The CD also includes high quality Replay Movies & other demos. Site Licence is included.

## Hard Discs

New

**Carr.: a=£2, b=£6, c=£8**

**NEW!! Simtec IDE Interface £69**

New High performance IDE/ATAPI interface for all RiscOS Computers from A3000 to RiscPC (specify when ordering). Supports up to 4 IDE/ATAPI devices including ATAPI CD-ROM Drives.

| 3½" Hard Drives | IDE | SCSI |
|---|---|---|
| IBM 540Mb | - | £150b |
| Quantum 2.1Gb | £130b | £Callb |
| Quantum 4Gb | £215b | £Callb |
| S/g Cheetah AV 4.5Gb | - | £520c |
| S/g Cheetah AV 9.1Gb | - | £830c |

10,000rpm Cheetah drives are very suitable for VideoDesk.

**Syquest Removable SCSI Drives**

| | | | |
|---|---|---|---|
| EZ230 Ext Drive | £160c | EZ230Mb Cartr. | £21a |
| EZ135Mb Cartr. | £20a | 270Mb Cartridge | £40a |

**Hard Disc Interfaces/Accessories**

| | | | |
|---|---|---|---|
| IDE interface | £69b | 50-50C SCSI Cble | £12a |
| Morley Uncached | £100b | 25D-50C SCSI Cbl | £12a |
| Morley Cached | £135b | SCSI2-50C Cable | £18a |
| Cumana SCSI II | £155b | SCSI2-25D cable | £18a |
| | | 50IDC 4-way SCSI | £12a |
| External case/psu | £90c | 50C Terminator | £12a |
| 2nd IDE Drive Kit | £15a | 50HPC Terminator | £15a |

## zip/jaz Drives

New

**Now include our RiscOS JazZip tools (£15 if purchased separately)**

- zip & jaz Drives work just like hard drives except they are removeable, giving instant access to files
- 100Mb discs for zip & 1Gb discs for jaz drives.
- Data transfer speeds up to 1Mb/s for zip drives & >5.5Mb/s for jaz drives - ideal for backup up.
- Each drive comes with 1 year warr. and a disc.
- SCSI drives require a SCSI card that is suitable for removeable devices.

| | |
|---|---|
| **Internal SCSI zip drive** | **£120c** |
| **External SCSI zip drive** | **£120c** |
| **External Parallel zip drive** | **£120c** |
| **- add £29 for RiscOS Parallel Driv'r** | |
| Single 100Mb zip Cartridge | £13a |
| Pack of 5 zip Cartridges | £50b |
| **Internal 1Gb jaz drive (3½")** | **£240c** |
| **External 1Gb jaz drive** | **£320c** |
| Single 1Gb jaz cartridge | £70a |

**Carriage: a = £2, b = £6, c = £8, d = £10**

## JazZip Tools

New

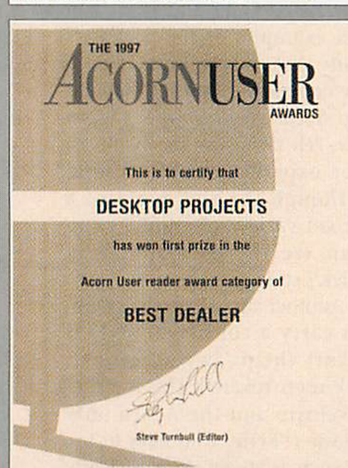
**The ultimate utility for SCSI or Parallel Iomega Zip/Jaz Drives**

**£15a Inc VAT**

**(free when purchased with a drive)**

JazZip provides you with a complete set of RiscOS tools for Jaz/Zip drives which are equivalent to those provided with the PC DOS utilities that are provided with Iomega drives. Requires a driver for parallel use. Features include;

- Password protection of discs using the standard Iomega protection features which are compatible across RiscOS, PC and Mac platforms.
- Lock/Unlock zip/jaz discs without passwords.
- Lock/Unlock zip/jaz discs with passwords.
- Unlock zip/jaz discs until next ejected from drive.
- Low Level format zip/jaz discs.
- Initialise zip/jaz discs for RiscOS.
- Initialise zip/jaz discs for DOS/Windows.
- Unprotect the Tools disc provided with drives to allow them to be reformatted/Initialised for Acorn
- Compatible with IZipFS, Morley, Cumana, VTi, PowerTec SCSI. Other support to be verified.




## Winter Offer

**Buy a RiscPC or A7000+ between 1st December 1997 & 28th February 1998 and claim one of the following free of charge.**

**Nintendo 64 games console with Duke Nukem64 & Lylat Wars games**

OR

**A Midi Card, Evolution MK149 Midi Keyboard, MidiWorks Lite, ESP MidiSynth+ & backplane.**

Offer is only open to Clan Members. £15 to join. The Nintendo Games titles may change without notification.

## RiscOS Computer Systems

1yr warr. **Carriage included on computers.** All machines are single slice. Backplane fitted to 10M RiscPC only.

**See adjacent for details of Special Winter Offers on Computers**

**233MHz StrongARM now fitted to all RiscPC Computers.**

| Computer Model with | 14" (CTX) | 17"(8617) | No Monitor |
|---|---|---|---|
| A7000+ 8MHD1.2Gb | £950 | £1290 | £810 |
| A7000+ 8MHD1.2Gb+24xCD | £1020 | £1360 | £890 |
| RiscPC StrongARM 4MHD1.2Gb | £1240 | £1580 | £1100 |
| RiscPC StrongARM 4MHD1.2Gb+24xCD | £1310 | £1650 | £1170 |
| RiscPC StrongARM 10MHD1.2Gb | £1540 | £1880 | £1400 |
| RiscPC StrongARM 10MHD1.2Gb+24xCD | £1610 | £1950 | £1470 |

**The 10M RiscPC includes Acorn's J233 Internet software pack - (available ~spring 98)**

**NEW!! RiscPC's are now available with 15" iiyama Monitors**

**Add £95 to 14" (CTX) prices for iiyama MF-8515G 15" Monitor.**

**Add £95 to 17" prices for iiyama MT-9017T instead of MF-8617E.**

**20/20 Finance on Acorn computers - ~20% deposit & 20 interest free monthly payments. Loans from £700(min) - £3000. Subject to status.**

Mail Order - 0161-474 0778 (All prices INCLUDE VAT) The lowest prices without compromise

## RiscPC PC Cards

| | |
|---|---|
| A1 5x86-100 (512kb) | £370b |
| above price includes PC Pro | |
| Acorn 586-100 (256kb) | £350c |
| PC Pro (without PCExchange) | £38a |
| Windows '95 CD (Full) | £90a |

The above can be installed directly from CD without previously installing DOS or Windows.

## RiscPC Upgrades

| | |
|---|---|
| 233MHz StrongARM | £275b |
| 2nd Slice with PSU | £116c |
| 2nd Slice without PSU | £90c |
| YES 16 bit Mozart Card | £70a |

## Memory

**Following prices strictly whilst stocks last.**

**RiscPC/A7000 SIMMS**

| | | | |
|---|---|---|---|
| 4Mb | £20a | 8Mb | £25a |
| 16Mb | £35a | 32Mb | £75a |

**RiscPC VRAM**

| | | | |
|---|---|---|---|
| 1Mb 2nd user | £40a | 2Mb | £88a |
| 1-2Mb u/g (exchange) | | | £70a |

**Call for details of memory for other models.**

## Monitors (Carriage £10)

Older computers will require an adaptor £12

**Hi-Spec 14" Monitor £140**

FST, 0.28" dp, 1024x768, 30-54kHz & pre-sets.

**Ilyama MF-8515G 15" £235**

High spec FST Tube with 0.28" dot pitch

Ilyama MF-8617E 17" £480

High spec FST Tube with 0.26" dot pitch

Ilyama MT-9017T 17" £530

Very High spec Diamondtron tube, 0.25" stripe

## Printers (Carriage £8)

| | |
|---|---|
| Canon BJC-4300 | £195 |
| Canon BJC-4550 (A3) | £255 |
| Canon BJC-5500 (A2) | £590 |
| Canon BJC-620 (720dpi) | £240 |
| Epson 400 (720dpi, 3ppm) | £190 |
| Epson 600 (720dpi, 4ppm) | £275 |
| Epson 800 (1440dpi, 7ppm) | £390 |
| HP LaserJets 6P | £585 |

**Add £47 to above printers for TurboDriver**

## Hard Cards/Multi-Pods

**See top for other hard discs. Carriage £8**

**A3000/A3010 Hard Cards**

340Mb or 420Mb £150b

## Portable Computers

**Carriage: a=£2, b=£6, c=£8**

| | |
|---|---|
| Pocket Book II (1Mb) | £305b |
| **NEW Psion Series 5 - includes PsiWin Link** | |
| Psion 5 8Mb RAM | £480c |
| **Psion 3c**(backlit) 2Mb- | £325b |
| **AutoRoute Express** | **£60a** |

**- one of the best packages for the PB/3a**

| | | | |
|---|---|---|---|
| A-Link | £59a | Mac Serial Link | £50a |
| Parallel Link | £34a | PsiWin PC Link | £80b |
| 3/3a Mains Adap. | £18a | 5 Mains Adaptor | £38a |

## Hardware Upgrades

| | |
|---|---|
| 24i16 Card (1Mb) | £450b |
| DMI50 Dual Midi Card | £138b |
| DMI50XGS Midi/Synth | £335b |
| Dual Serial Card | £104b |
| FPA for 25MHz ARM3 | £67a |
| Joystick I/F (Not RiscPC) | £30a |
| Logitech Mouse (Acorn) | £26a |
| Movie Magic (1 only) | £199b |
| - Includes two VideoCD films | |
| RiscTV Card (Irlam) | £265b |
| RiscTV Teletext option | £45a |
| Scart Cable (9 or 15 pin) | £12a |
| Serial Upgrade (A3000) | £27a |
| 2 x 100W Speakers | £25c |
| Videodesk (Irlam) | £1165b |

## Scanners (Carriage £8)

ScanLight Video 256 £199
- above is suitable for A3-A4k

**Epson Colour Scanners**

Include !TWAIN & ImageMaster for RiscOS. Bundles include CorelPaint & OCR software for PC's/PC Cards and approp PC interface card.

| | |
|---|---|
| GTx-5000 Para bundle | £235 |
| GTx-5500 SCSI bundle | £300 |
| GTx-8500 Para bundle | £525 |
| GTx-8500 SCSI bundle | £550 |
| GTx-9500 Para bundle | £620 |
| GTx-9500 SCSI bundle | £660 |

## I³ Networking (Carr. £6)

| | |
|---|---|
| A30X0 EtherLan 102 | £130 |
| Archi EtherLan 514 | £130 |
| RPC/A7k EtherLan 602 | £110 |

Add £17 to above prices for Access+.

## Modems (Carriage £8)

33.6 FLASH Sportster £140
Flash upgradeable to 56kbs

Modems come with a 9-25 PC wired cable. A3000/Archimedes req'r an Archi wired cable.

| | |
|---|---|
| Sport'r Flash Message+ | £170 |
| ANT Internet Suite II | £110a |
| ArcFax | £33a |
| Dual Serial Card | £104b |
| 9-25 Archi or PC Wired Modem Cable | £12ea.a |
| 3-way Serial T-Switch (incl. comm. cable) | £32b |

## Printer Consumables

**Carriage: £2 for Cartridges, £8 for Toner**

| | | | |
|---|---|---|---|
| BJ-10 (BC-01) | £18 | BJ-200 (BC-02) | £19 |
| BJ-210 (BC-05) | £28 | BJ-240 (BC-06) | £Call |
| **BJC-600 Series** | | BJ-300 (BJI-642) | £16 |
| BJI-201HCbk Black | £10 | **BJC-4000 Series** | |
| BJI-201bk Black | £6 | BCI-21Bk Black | £9 |
| BJI-201C/M/Y | £8 ea. | BCI-21C Colour | £17 |
| **BJC-800** | | BC-20 Fast Black | £28 |
| BJI-643 Black | £18 | BC-22 Photo Cart | £34 |
| BJI-643C/M/Y | £23 ea. | BC-22 Photo Kit | £39 |
| **HP DeskJets-500 ser.** | | **HP DeskJets 600 ser.** | |
| Mono | £23 | Mono | £25 |
| Colour | £25 | Colour | £27 |
| Eps Stylus Black | £16 | Eps Stylus II Black | £20 |
| Eps Stylus Colour | £26 | Eps Stylus II Col'r | £26 |
| **Laser Toner** | | C3903A (LJ5P) | £64 |
| EP-L (LBP-4) | £64 | HP92274A (LJ4L) | £60 |

## Terms & Carriage

**Carriage:** To benefit personal callers to our showroom carriage is itemised seperately. The carriage indicated is for single items. Please call us for total carriage when ordering more than one item since it is not cumulative.

**Terms:** All prices include VAT except books. Carriage is not included unless otherwise stated. Carriage charges apply to mainland UK (excluding remote areas, Scottish Highlands, Chann Isles, IOM), elsewhere at cost. Orders MUST be accompanied by a phone number. Prices and spec's subject to change without notification. Goods subject to availability. Goods not offered on trial basis. Restocking fee on non-faulty returns. Educ Inst official orders accepted. E&OE.

## Where to Find Us




## Books (No VAT)

**Carriage: a=£2, b=£6, c=£8,**

| | |
|---|---|
| Acorn RISCOS3 PRM's | £99.95c |
| Acorn Volume 5a PRM | £29.75b |
| Acorn BBC Basic VI Guide | £19.95b |
| Acorn RiscPC Tech Ref Manual | £49.95c |
| ArtWorks Made Easy (Dabs) | £5.00a |
| Budget DTP (Dabs) | £5.00a |
| 'C' A Dabhand Guide (Dabs) | £5.00b |
| RiscOS 3 First Steps (Dabs) | £5.00a |
| Wimp Programming for All (Beebug) | £10.95a |

## CD-ROM's

**CD software for RiscOS**

| | |
|---|---|
| ArtWorks on CD (CC) (Carriage £6) | £105b |
| Childrens Micropedia (Kingfisher) | £58b |
| ClipArt CD 1/2 (CC) | £21c each |
| Dinosaurs (Microsoft) | £50c |
| Dune II (Eclipse) | £41c |
| Granny's Garden CD | £32c |
| Guardians of the Greenwood | £51c |
| Hutchinsons Encyclopedia 92 for RiscOS | £15c |
| Hutchinsons Encyclopedia 97 for PC only | £15c |
| Kiyeko | £Calla |
| Musical Instruments (MS) | £50c |
| My 1st Incred. Amazing Dictionary (DK) | £38c |
| PB Bears Birthday Party | £42c |
| RiscDisc Vol 1 / 2 CD | £17c / £20c |
| Simon the Sorcerer CD | £41c |
| The Way Things Work (DK) **Limited Offer** | £40c |
| Ultimate Human Body (DK) **Limited Offer** | £40c |

## Applications

**Carriage: a=£2, b=£6, c=£8**

| | |
|---|---|
| Acorn C/C++ (Acorn) | £229c |
| Advantage (Longman) | £51a |
| ANT Internet Suite (ANT) | £110a |
| ArcFax (David Pilling) | £33a |
| ArtWorks (CC) | £105b |
| Card Shop (Clares) | £23a |
| Chameleon 2 (4Mation) | £39a |
| Compression (CC) | £31a |
| DataPower2 (IOTA) | £165b |
| DaVinci (Spex) | £Calla |
| Disc Rescue 2 (Look) | £43a |
| Easy C++ (Beebug) | £102a |
| Eureka v3 (Longman) | £93b |
| FastSpool+ (WSS) | £17a |
| FireWorkz Pro (Colton) | £134b |
| Font Directory2 (Look) | £42a |
| Font FX (DataStore) | £12a |
| Hatchback (4Mation) | £35a |
| HTML Edit 3 (R-Comp) | £47a |
| ImageFS2 (Alt Publ) | £43a |
| Image Outliner (IOTA) | £52a |
| Impression Style / Publisher | £83b / £136b |
| Impression Graphics Loaders (CC) | £31a |
| Impression Text Loaders (CC) | £31a |
| MacFS / MacFS Lite (CC) | £105a / £52a |
| Ovation Pro | £175c |
| PC Pro (without PCExchange) | £38a |
| PC Pro (with PCExchange) | £47a |
| PC Sound Professional (R-Comp) | £27a |
| Personal Accounts (Apr) | £40a |
| PhotoDesk Light (Spacetech) | £120b |
| PhotoDesk2 (Spacetech) | £245b |
| Prophet (Apricote) | £154b |
| RiscCAD (Davyn) | £240c |
| S-Base2 Personal / Developer | £54c / £100c |
| Sibelius Junior | £55a |
| Sibelius 6 / 7Stud / 7 | £110b / £445b / £939b |
| Sleuth2 (Beebug) | £99a |
| SparkFS (Pilling) | £24a |
| Speech 2! (Superior) | £24a |
| StrongGuard (ARMClub) | £24a |
| Studio24 Pro (Pineapple) | £130b |
| Textures Professional (R-Comp) | £19a |
| Touch Type (IOTA) | £42a |
| Top Model 2 (Spacetech) | £149a |
| TurboDrivers Canon/HP or Epson(CC) | £54b |
| Vector (4Mation) | £72a |
| Web Designers Toolkit (R-Comp) | £28a |

## Games (Carriage £2)

| | |
|---|---|
| Alone in the Dark (Krisalis) | £29 |
| Birds of War (4D) 2Mb | £30 |
| Break 147/Superpool (4D) | £30 |
| Carnage Inc (4D) | £16 |
| Chocks Compendium (4D) | £30 |
| Crystal Maze (Sher) | £28 |
| Cyber Chess (4D) | £16 |
| Darkwood (Eclipse) | £25 |
| Drifter (4D) | £30 |
| Dune II (floppy) (Eclipse) | £30 |
| Empire Soccer (Maglm) | £26 |
| E-Type Compend. (4D) | £19 |
| E-Type 2 (4D) | £30 |
| Exodus (Artex) | £25 |
| Fire & Ice (Times Warner) | £24 |
| Global Effect (Eclipse) | £30 |
| GODS (Krisalis) | £10 |
| Haunted House (4D) 2Mb | £23 |
| Holed Out Compendium (4D) | £16 |
| James Pond (Krisalis) | £10 |
| Krisalis Collection | £26 |
| Lotus Turbo Chall2 (Kris) | £26 |
| Magic Pockets (Reneg) | £26 |
| Play it again Sam 2/3 | £24 each |
| Populous (Krisalis) | £26 |
| Real McCoy 2/3/4/5 (4D) | £30 each |
| Repton 3/4 (Superior) | £22 each |
| Saloon Cars Deluxe (4D) | £30 |
| Scrabble (US Gold) | £24 |
| Simon the Sorcerer 2Mb | £31 |
| Spobbleoid Fantasy (4D) | £27 |
| Starfighter 3000 (Fednet) | £26 |
| Stunt Racer 2000 (4D) | £30 |
| Tanks (Werewolf) | £23 |
| Time Machine (4D) | £23 |
| Virtual Golf (4D) 2Mb | £30 |
| **Wolfenstein 3D** | **£12** |

**- Now compatible with RiscPC+StrongARM**

## Educational (Carr. £2)

**10/10 Series** **£14 each**

Early Essentials (over 7), English (6-16yrs), French (8-16yrs), Junior Essentials (5-11), Maths (Number) (6-16), Maths (Algebra) (6-16), Maths (Statistics) (6-16), Maths (Geom'y) (6-16), Spelling (over 9), Essential IT, Geog.,

| | |
|---|---|
| Fun School 3 (under 5, 5-7, or over 7) | £22 |
| Fun School 4 (under 5, 5-7, or over 7) | £22 |
| Granny's Garden (floppy) (4M) | £25 |
| Maths Circus (4Mation) | £27 |
| Naughty Stories Volumes 1 or 2 | £45 each |
| Playdays (Gamesware) | £24 |
| Ridiculous Rhymes | £45 |
| Rosie & JimTwin Pack | £18 |

# Desktop Projects Ltd

**Tel: 0161-474 0778**
**Fax: 0161-474 0781**

Unit 2A, Heapriding Business Park, Ford St, **STOCKPORT**, Cheshire. SK3 0BT. WWW: http://www.desktopp.demon.co.uk
Email: info@desktopp.demon.co.uk. Open Mon-Sat 10.00-18.00 hours.

We Accept







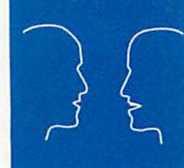










# comms

# FidoNet – the other network

Even though the Internet now seems to be pervading all aspects of our daily life, the FidoNet Bulletin Board network still holds many Acorn programmers and comms enthusiasts in thrall. Fidonet was and still is the forerunner of modern packet-transfer technology and its simplicity can offer an insight into the much more complex workings of the Internet.

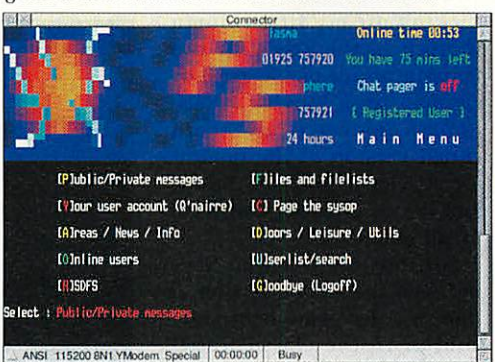
FidoNet Bulletin Boards have pioneered private electronic mail, public discussion groups, file transfer and online activities, and BBS operation on FidoNet is still a fascinating hobby. Fidonet Software for Acorn machines continues to be refined and developed and is freely available, as is membership of an Acorn FidoNet BBS.

Message base summary — FidoMail — Personal: David Dade

| | All mail Total | New | NotRd | Personal Total | New | Marked | Found | Unscanned |
|---|---|---|---|---|---|---|---|---|
| All | 345 | 0 | [illegible] | 2 | 0 | 0 | 6 | 0 |
| Netmail | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| Netmail in transit | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| JunkArea | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ACORN BBS Sysop chat | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 |
| Adverts about anything Acorn | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| General chat on Acorn Computers | 18 | 0 | 18 | 0 | 0 | 0 | 0 | 0 |
| Acorn Chat | 4 | 0 | 4 | 0 | 0 | 0 | 0 | 0 |
| Chat about Acorn hardware | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| New files arrived at Acorn BBSs | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Chat about Acorn Software | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| ARCBBS SYSOP Chat | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| comp.sys.psion.announce | 16 | 0 | 16 | 0 | 0 | 0 | 0 | 0 |
| comp.sys.psion.applications | 290 | 0 | [illegible] | 0 | 0 | 0 | 6 | 0 |

I have new mail

*!FidoMail* is the definitive network mail reader, editor and message database for BBS members who choose to dial in briefly to their parent Fidonet BBS to collect private mail and their selection of discussion group messages for later offline reading. Originally by Thomas Olsson, *FidoMail* is now developed by Glenn Richards of Squirrel Solutions. His latest improved version of the program is now available from most Acorn BBSs.




Out on a Lymm

Keith Hall's Plasma Sphere BBS based in Lymm, Cheshire has been running for nearly six years and is the home of much FidoNet programming activity. Keith wrote its award-winning *!ArmBBS* software suite which is now on public release as shareware. He is also the maintainer of *!ArcBinkley*, the freeware application employed by almost every Acorn BBS sysop and FidoMail user to transfer their FidoNet message packets from BBS system to system across the world.

For more information on *FidoMail*, e-mail glenn@squirrel-net.demon.co.uk You can download *Arc-Binkley* and *ArmBBS* from The Plasma Sphere BBS on 01925-757920/757921 FidoNet address Fidonet#2:250/219.0. The latest list of Acorn BBSs is on the cover disc and available from Arctic BBS on 0181-903 1308/1309.

# Getting attached

Compared to some other specialist platforms, Acorn users are very well served by philanthropic programmers.

I've noticed that while most freelance programs for Psion machines are shareware evaluation versions, we can freely obtain and use complete high-quality freeware such as Acorn 32-bit Comms and Internet program suites.

I'm very attached to Attacher

Every now and again a freeware program turns up which has me wondering how I did without it previously. One such is *!Attacher*, the freeware application by John Allen. This is a tool as essential to an Acorn Comms user as any terminal or Internet program, for it transforms a really fiddly operation into a drag-and-drop dream.

*Attacher* is a utility to decode or encode attachments; data or program files encoded into plain text files sent by a platform-transparent medium such as e-mail, Usenet newsgroups or FidoNet Netmail. Whether you've been sent a new !Runimage file for *Ovation Pro* or a *Word for Windows* document, *Attacher* can deal transparently with whichever type of encoding has been used. The program opens a small window onto which you drop text files containing attachments for decoding. *Attacher* seeks out the attachments and presents you with file icons for you to save to directories, prompting you for the next input file if the attachment has been received in parts. It can also decode files in messages dragged directly from your e-mail reading software.

Creating an attachment is just as easy; drop your archive or document file to one of the encode areas of the window, and drag the encoded file icon into the accompanying e-mail message; and it's done. When sending such files through BBS e-mail gateways, use *Attacher*'s feature to split a 'UUencoded' attachment into the specified size sections for successful transmission through the gateway. Always check first with the recipient and the BBS operator before sending a large attachment this way.

*Attacher* is on this month's cover disc and available from BBSs and from John Allen's website at: http://www.bramber.demon.co.uk/john/soft.html

## A pocket full of Rye

Peter Stephens, ex-sysop of Acorn BBS in Hong Kong, and his wife Liz have now returned to the UK and live in Brede, near Rye in East Sussex. Peter is building a website, part of which is devoted to his other love – MIDI music. His speciality is jazz, and the site contains a collection of Acorn-related MIDI information and links, as well as a collection of songs he has sequenced for a Yamaha XG synth. Peter uses an Acorn StrongARM Risc PC and a variety of MIDI hardware and software, most of which is reviewed in his pages.

*Peter Stephens' MIDI page*
*http://www.thenet.co.uk/~stephens/peter.htm*

## Second strike

Now hosted by Adam Armstrong, Thunderbolt BBS is set to return to the new location of Morpeth, Northumberland. Adam has a Risc PC 600 running *ArmBBS* with a 33,600bps modem and the BBS has been online for testing using the RingBack system. Adam plans to keep the original flavour of Toby McKenzie's Thunderbolt system but add to it with his own interests. Adam is in his GCSE year and plans to go on to college to study Java, C programming, Electronics and CAD.

*ThunderBolt BBS*
*01670 503653 - RingBack only*

## Acorn-Psion linkup

Following my recent Psion Series 5 item, John Woodthorpe tells me that using Warm Silence's *Win95FS* can preserve the S5's long filenames while still employing *Connector* and RISC OS. John has uploaded a *Connector* script that does the job to his Acorn-Psion Link website, which is a new resource for information on connecting Psion Series 3 and 5 machines to Acorn computers. Check out Innovative Media Solutions' website too for their forthcoming *PsiRisc* connectivity product, rumoured to enable linkup between RISC OS and Psion Series 3, Siena and Series 5 machines.

*Warm Silence – Win95FS*
*http://www.wss.co.uk/*

*John Woodthorpe*
*http://ourworld.compuserve.com/homepages/JWoodthorpe/*

*IMS*
*http://www.ims-cdc.demon.co.uk/*

## Contacting me

Keep sending me interesting URLs for the next yoUR List by e-mail to david@arcade.demon.co.uk, or mail #2 on Arcade BBS 0181 654 2212.





## Essential Editing

The popular text editor *StrongEd* has now reached version 4.51 and is available as an update patch to recent versions at http://login.eunet.no/~guttorvi/strong.html My personal favourite *Zap*, has also received some updates and can be obtained from HENSA. I'll be looking at the latest incarnation of *Zap* in more detail in next month's column.

## Acorn moves

Now that we're finally into the new year, the release of the Risc PC 2 must be approaching fast, and it'll be interesting to see the 'New Acorn' stance on the new machine.

It would be great to see Acorn spending a little time investigating the possibility of including some of the best PD utils on the hard discs of new machines. I'm sure most PD authors would welcome the move and it really does seem sensible to offer new users an array of quality (and free) software that would otherwise take many months to accumulate. Here's hoping...

## Help

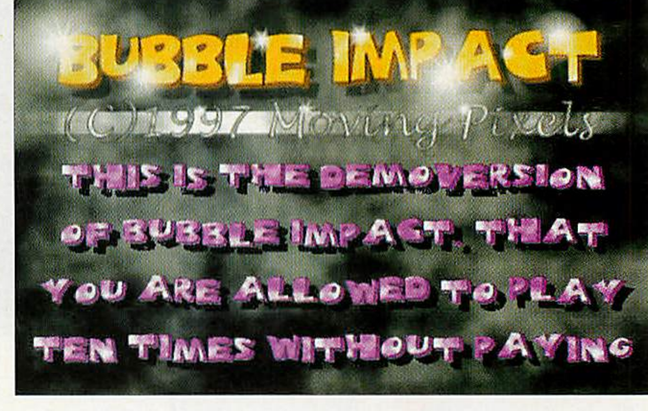
David Rushall has updated his highly recommended *FlHelp* program which replaces Acorn's *Help* application with a far better alternative. Version 1.21 can be found on David's website at http://www.piecafe.demon.co.uk/

## Recommended PD Libraries

- APDL, 39 Knighton Park Road, Sydenham, London SE26 5RN
- ARM Club PD Library, Freepost ND6573, London N12 0BR
- Beebware PD, 83 Forrest Road, Huncote, Leicester LE9 3BH
- Five Star Marketing, 4 Shepherds Walk, Bushey, Hertfordshire WD2 1LZ
- The Datafile, Willoughby House, 89 Woodville Road, Boston PE21 8BB

# Bubble Impact

Kicking off my first column written in the new year is a fantastic arcade-puzzle game by German team Moving Pixels. *Bubble Impact* is an Acorn coded version of the famous arcade classic – *Bubble Bobble*, and it's an essential download for all games fans.




For those of you who have not seen the arcade version of *Bubble'*, the game is broadly similar to the classic *Tetris* game. Instead of blocks, you start the game with an array of multi-coloured bubbles at the top of the playing area. At the bottom of the screen, your dragon character controls a little gun that fires a supply of extra bubbles up to the top of the screen.

If there are more than two of any coloured bubbles adjacent to each other they explode and drop to the bottom of the screen. Any bubbles attached to these exploding bubbles will also fall away. The aim of the game is to clear the playing area of bubbles, so there's quite a strategy element to build up a chain of bubbles that you can take out in one go to clear the entire screen.

For the seasoned Bobbler the big question is, how does the game compare to the arcade? The answer is refreshingly positive as Moving Pixels have done a great job with the conversion. It's been taken almost pixel for pixel from the SNES version of the game. Most of the graphics and sounds have been grabbed from the original game and put together with the original ARM code. This gives the game a really authentic appearance. You feel like you're playing the arcade game for real, but without the little graphical and speed glitches you often encounter with emulated games.

And that really sums *Bubble Impact* up – it's very smooth and professional. The sound fx have been reproduced nicely and have been put together with a new music mod to complete the feel. After seeing many shabbily produced games and demos you really appreciate the way *Bubble Impact* has been created. Little touches like the smooth fade in and out of the menu music really do make a difference.

From a playability point of view this game scores full marks. Once you start playing it's very hard to stop – even when you've got a two page PD column to write. On top of the basic arcade mode there's a range of two player versus the computer modes to contend with. The arcade mode leaves you with time to think clearly about the next move, but when you're playing the computer things really get quite hectic.




The various battle modes pitch you against the computer's fast playing speed but limited intelligence. With two battle screens side by side, you play simultaneously with bubble explosions on one screen adding extra bubbles to your opponent's screen. Despite intending to limit myself to a quick test of the main play modes, I found myself absorbed in the random battle mode. As you've probably got the impression by now, I like this game.

The Moving Pixels team have released *Bubble Impact* as a shareware game. The freely downloadable demo gives you ten free plays of the basic game with a limited number of levels and the versus computer modes. The registered version, which costs just DM10, gives you the full 100 levels and a great two player mode (that's two human players). The demo version of *Bubble Impact* can be downloaded from the games section of the Acorn Demo Server.

For more information contact the authors – Patrick Hinrichs, Haltenhoffstr. 42, 30167 Hanover, Germany or e-mail fraggle@ncarrier.leine.de Games of this quality are few and far between so please register and keep Moving Pixels in the games business.

# Fishtank 2

DFI's *Fishtank 2* takes the simple fixed screen of the first *Fishtank* demo to new dimensions with a complete 3D world. After a whirly looking start of flared light sources the demo quickly settles down to a gliding fly-around of a rather attractive 3D world. DFI have used a whole range of graphical fx to create the world and it works well as an advert for their forthcoming game engine.

The ground is rendered as a voxel landscape, with textured and shaded polygon shapes for the fish and other objects. The surface of the water is textured using a strange animating plasma, but it does look a little rough and the lack of looping textures really tends to spoil the effect. Lens flare is used to great effect when the sun moves into view on the screen, and despite the odd glitch when the camera flies through an object it's all very graphically impressive. Everything is presented in 24-bit colour and it shows.











The main problem, which most demo watchers I talked to noticed, is the frame rate. Running on a StrongARM processor the demo crawls along at such a slow pace that the quality of the graphics is a tad spoilt. When the frame rate of real-time graphics drops below a certain level things tend to get very jerky and that's certainly happening here. Writing new graphical fx is always a trade-off between speed and quality. You set the level of detail to achieve a good balance between the two, and I feel that DFI have slightly overdone the quantity of objects in the scene.

That aside, it's a welcome addition to the growing collection of StrongARM demos on the PD scene and is worth checking out. What I'm really looking forward to is the first game to be written with DFI's engine. If my inside information is anything to go by, it's going to be impressive. While I'm on the subject of game engines, several people have asked me what the situation is with a range of engines that are being developed. I'm in the process of preparing a little report which should appear in the column soon. If you're developing an engine and would like to see it featured here, please let me know.

*Fishtank 2* can be found on the DFI website at http://www.dcs.ed.ac.uk/~pat/dfi.html

# TankDuel

*TankDuel* is a simple plan view arcade game for two to four players. Each player controls a tank with direction and fire controls, with the aim of shooting the other players before they can toast you. Despite being in a hi-res mode the graphics are pretty basic with the gameplay not doing the production any favours. This is a classic game but it hasn't really been reproduced well here.

Perhaps I'm expecting too much from a game written entirely in BASIC, but I do feel that so much more could be done with this simple idea. Little niggles like the poor collision detection when you drive into objects and the ability to shoot straight through enemy tanks without hitting them really needs to be tidied up. I'm sure I remember playing a BBC B version of this game which was much more fun...

So as author Graeme Scott puts it, 'We know this game is not perfect, but it should provide a little bit of fun for a short time'. For more information contact Graeme at AcornRules@aol.com

## Xmas '97

Working on past experiences, a demo with Xmas in the title is something to be avoided. Cheesy Xmas demos seemed to have plagued download sites for several years and the trend looks set to continue with the latest release from Paranoia Complex. However, for once, the authors of this Xmas demo seem to have a sense of humour. Even if it's not a particularly well-developed one.

With a host of silly movie graphics which seems to include Santa causing a car crash (how festive), the team manage to just about poke fun at this Christmas demo genre. It's all just a bit of fun really, but be warned that the soundtrack and graphics do feature some particularly rude language. Get the demo at http://WWW.Uni-Ulm.de/~s_cballh/PCX-E.html

## Life's a drag?

Don't let it be! Try Matthew Bullock's *WinDrag* module. As Matthew explains, 'Most users of RISC OS will at some point have come across the fact that if you drag or re-size a window that has panes, multi-tasking stops. This has finally annoyed me too much, so I have fixed it.' Simply add the mod to your startup sequence and Bob is your Uncle. Check Matthew's website at http://dialspace.dial.pipex.com/matthew.bullock/

## Mame update

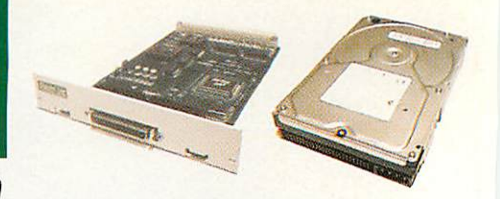
The popular arcade games machine emulator MAME has almost reached version 0.3 with support for even more games including *Gauntlet*, *Arkanoid* and *Donkey Kong Junior*. The new version should be available on the Net at http://www.elecslns.demon.co.uk/MAME by the time you read this.

## Contacting me

You can contact the PD page by writing to me, Paul Wheatley, at *Acorn User*, IDG Media, Media House, Adlington Park, Macclesfield, SK10 4NP. Or preferably, by e-mail to aupdpage@idg.co.uk

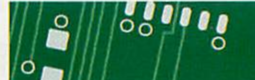




# Power-tec

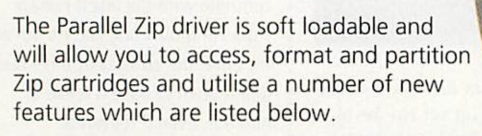
**The complete disc solution**



## PowerZip

### Power-tec Parallel Port Zip Driver

**Announcing** the new Power-tec Parallel Port Zip Driver software.



The Parallel Zip driver is soft loadable and will allow you to access, format and partition Zip cartridges and utilise a number of new features which are listed below.

New Low Price



### Main PowerZip Driver Features:

- Supports daisy chaining of multiple parallel Zip drives!
- Ability to create many partition types including: DOSDisc.
- Disc write protect option (using Password).
- Media interchangeability between SCSI and Parallel Zip.
- Ability to read old Argo Zip Discs.

## PowerROM

### Power-Up your old SCSI card!

If you have an old SCSI card from one of these manufacturers:

*Acorn • Castle Technology • Cumana*
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and want all the benefits Power-tec SCSI card users enjoy as well as being Risc PC/StrongARM compatible, **then you need a PowerROM!**

The PowerROM upgrade gives your old card a new lease of life, with the **full** SCSI 2 command set and all the functionality and compatibility of our Power-tec SCSI cards.

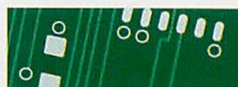
## PowerIDE

### Power-tec IDE Partitioning Utility

**Our** new low-cost IDE partitioning software allows you to partition large IDE drives and gives the following features:

- Allows users with Risc OS 3.6 & 3.7 to partition large IDE drives (eg 9GB) into smaller partitions thus reducing the LFAU size and saving hard disc space.
- Allows users with versions of Risc OS 3.1 & 3.5 to partition large IDE drives (eg 4GB) into multiple 512MB partitions.

The PowerIDE driver is soft loadable and allows you to access, format and partition large IDE drives for Risc OS and DOS.

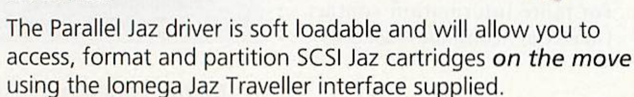


## PowerJaz

### Power-tec Parallel to SCSI Jaz Converter

**Announcing** the new Power-tec Parallel Port to SCSI converter for Iomega SCSI Jaz Drives.

The Parallel Jaz driver is soft loadable and will allow you to access, format and partition SCSI Jaz cartridges *on the move* using the Iomega Jaz Traveller interface supplied.



## PowerSCSI

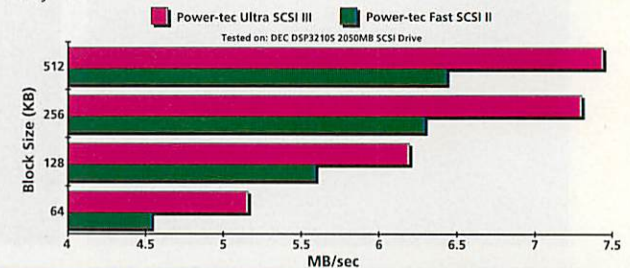
### Power-tec Ultra SCSI cards

The Power-tec SCSI cards support all the leading SCSI devices from Iomega, IBM, Seagate, Quantum to name just a few.

Acorn User Magazine, Christmas 1997 SCSI Review said the following about our Fast SCSI II card:

*"On the fastest drive tested, it was able to differentiate itself from the rest of the pack."*

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## PowerATAPI

### Power-tec ATAPI CD ROM Drivers

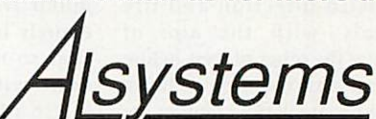
**New** low cost Power-tec Atapi, gives you full Atapi CD ROM drivers which support a wide range of CD ROM drives including Multi-changers (suitable for Risc OS 3.1 onwards).

## Prices

| | | |
|---|---|---|
| PowerZip | Driver only: | **£25** |
| PowerZip | with Iomega Parallel Zip Drive: Was ~~£135~~ | **£115** |
| PowerJaz | Driver only: | **£25** |
| PowerJaz | with JazTraveller Interface: | **£49** |
| PowerIDE | Driver: | **£25** |
| PowerAtapi | Driver: | **£25** |
| PowerROM | Upgrade (state make of SCSI card): | **£35** |
| Power-tec | Fast SCSI II card: | **£135** |
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| Ultra SCSI III | Upgrades: | |
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| | v2.0x Standard Upgrade: | **£49** |
| | v2.0x Technical Support Subscribers: | **£29*** |

NB: All prices exclude VAT and carriage.
* This price applies to customers with Technical Support current at 1st September 1997.

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# For BETTer, for worse

**Mike Buckingham** visits the BETT exhibition on the lookout for software that works on the PC card

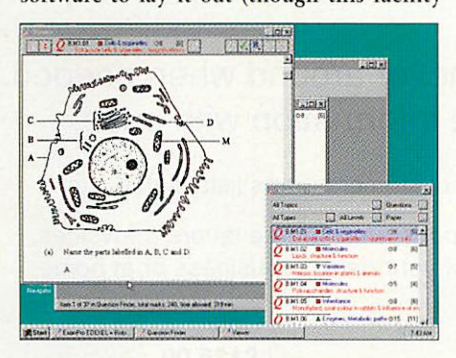
BETT is almost certainly *the* place to go for educational hardware and software. Despite the onward march of the Bill Brigade, there are still a fair few Acorn suppliers around. Sadly though, not every piece of new software is designed for the Acorn.

There was plenty to look at, but when I asked 'does it work on the PC card' surprisingly few suppliers actually knew. Several said 'we believe so', quite a few said 'huh?' and looked bemused. Anyway, what follows are a few personal choices based on what was there, what isn't available in RISC OS and what I could get my mits on. Most, it has to be said, were demo versions but I have tried them all on my system and they work.

## Study aid

If I have a favourite, this is it because it is a neat and very useful idea for hard pressed teachers who have to come up with all sorts of papers for their students, complete with marking schemes and so on, that are not only properly representative of the syllabus but also will give the student a good idea of the required standard.

The long hand way is to trawl through old exam papers and select what you want – tedious but accurate. Well this is exactly what *ExamPro* does for you but with greatly reduced tedium – you can select from the hundreds of questions available, each one the genuine article from past papers with marking scheme, examiners notes, all diagrams etc, then assemble a paper, get the software to lay it out (though this facility



needs checking, it's not perfect) and print it. Easy.

I had no trouble running this on *Win 95*, versions are available for primary and secondary schools. It covers Key Stages 2 and 3, GCSE and A level for English, maths and science, with design & technology plus modern languages available at GCSE. It is available from Helix Education on 01384 898969.

## Techie teaching

Maybe I'm biased as my background is techie, but it seems to me that using computers to teach technology is a thriving area. Fortunately there's plenty of software and hardware for the Acorn when it comes to things like control and interfacing. Yet there does seem to be a gap in the Acorn market when it comes to circuit simulation – building electronic circuits on the screen and seeing how they work. Two PC titles caught my eye here and could well prove of use in the technology department and perhaps reduce the cost of overcooked chips.

*INVENT! Crocodile Clips* is an analogue and logic circuit design system intended for school use and is about to be enhanced with pictures of what the real components look like – so the circuit appears both as a diagram and how it might look on the bench. Having built it you can test it, or you can hook it up on screen to a range of gears, motors, solenoids switches and so on to model a complete physical system – I am told this is the only software of its type to do this.

Naturally it also gives you test equipment to help analyse your circuit – you can employ wave generators, meters and even plug up a multi-trace 'scope. Neat. I've only tried a demo, but it seems fine. I was warned, however, that this might need a full 16M of memory for the PC card. Crocodile Clips Ltd are on 0131-226 1522.

## Electronics made easy?

*TINA* describes itself as the complete electronics lab and is clearly both more ambitious in terms of the components, facilities and complexity offered and more difficult to use simply because it is so extensive. Sadly, using the highly limited demo proved the system ran on the PC Card and suggested great things but didn't allow me to play with them – even a very basic amp circuit incurred its displeasure!

It did, however, stretch my long forgotten electronics skills by offering things like frequency response of LRC networks, phase diagrams and so on. In the digital domain it will show such things as expected voltage levels in a multivibrator and full timing diagrams of logic circuits. The sheer power of this software makes it less suitable for younger students but it should prove highly useful for higher level study. There is a simpler version called *Edison* but I haven't tested it at all. Tandem Technology are on 01243 576121.

## For the studious

Still on technology, AIRCOM Education caught my eye with a display of teaching software covering maths, English, the sciences and electronics with more titles under development. This is the sort of software you sit students in front of and leave them alone. They can watch, interact with worked examples, play the odd game and so on.

It crashed on my system first time around but remained stable from then on – I presume that was a glitch, perhaps simply because it was a demo. But I liked most of the explanations I saw and the simple animation, like trying to drop relief supplies onto a target from a moving plane, brought some of the science into focus. This claims to be fully compliant with the National Curriculum and should be of interest to the more motivated and capable student who is happy to work without a teacher. Aircom are on 01737 224434.

## Prep school

From the top to the bottom – at least in terms of age range, I was intrigued by the Fisher Price pre-school software which offers 20 activities aimed at getting your child ready for school. *Play Family* (age 1+ to 3), *Magic Circus* (ages 2-4), and *Kidstown* (4-6) all offer cute songs and games with simple activities for their respective audiences, complete with a fair few graphics of toys made by, of course, Fisher Price.

You could argue that including such images will make a visit to the local toy shed even more painful but I know my own kids have both preferred the familiar to anything new, so perhaps I should let that go. The software ran fine, again after an initial hiccup, but since my kids are now too old for this kind of thing and I've not yet degenerated that far into my second childhood I can only say this stuff looks to be on target.

## And the rest...

There was, of course, far more than this at the show. What seems to come out of this is that most educational titles should work OK on the PC card, not least because even the *Win95* software has mostly been developed over a long period and was first intended for *Win3.1*. I did have some failures though. A kids CD called *Adiboo* looked interesting enough to try but the sound gets corrupted – a known bug with *PCPro* that is scheduled to be conquered soon.

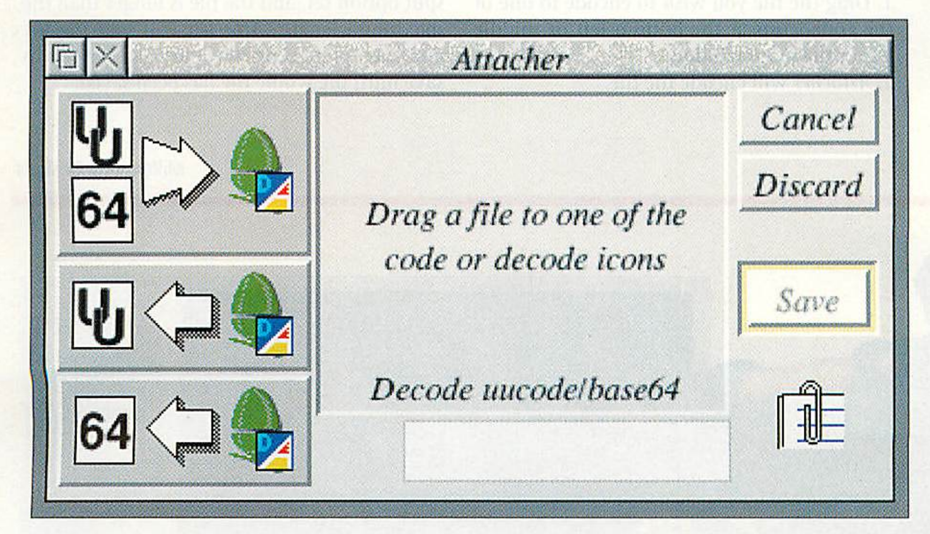
Other software, such as the science CDs from Bradford Technology do not work as they require *Win95* drivers that aren't available and perhaps never will be. Also, beware of new software for *Win95* only that uses long file names. This is another known problem that I hope to be looking into in my next column – but it's not all bad news.

### Contacting me

You can contact me, Mike Buckingham, by post at: *Acorn User*, Media House, Adlington Park, Macclesfield SK10 4NP or by dropping me an e-mail at: aupcpage@idg.co.uk

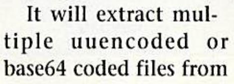
# Attacher

John Allen




*Attacher* codes and decodes uucode and base64 files such as might be sent and received as attachments via Usenet newsgroups or e-mail on the Internet. It works totally on the RISC OS desktop and is designed to work under RISC OS 3.00 and later versions.

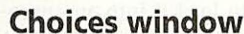
As well as decoding single files it will turn a series of messages containing sections of a uuencoded file (such as might be found in newsgroups with *binaries* in the title) into a single decoded file. Likewise it will split long uuencoded files into short sections to send in separate messages.



It will extract multiple uuencoded or base64 coded files from a single message, such as might be created by as attachments by a PC mail application. Interactive help is fully supported in all windows and menus.

Double-click on the *Attacher* icon in the Filer window. Clicking on the icon on the iconbar will re-open the main window if it has been closed. If the window is already open it will bring it to the top of the window stack.

*Attacher* is designed to be simple to use, making use of file drag and drop. To decode: Drop a file icon on the decode icon and to code drop it on a code icon. The resulting file can then be dragged wherever it is required, or named and saved or double-clicked to load it into an appropriate application.



## Choices window

This allows *Attacher* to be customised to individual users' requirements. Setting can either be saved, by clicking Save, to be used by *Attacher* each time it is loaded until different options are selected or, by clicking Use, they can be used for the session, the previous settings being used when *Attacher* is next loaded. The window is selected from the *Attacher* main window.

The options that can be set are:

- Filename of coded file (different options for uucode and base64)
- Whether *Attacher* should try to identify a PC file extension for coded files
- Whether uucoded files should be split into segments (if so the size of segments and their names can be set)
- Whether PC file extensions should be stripped from the filenames of decoded files.

## Decoding files

To decode a file or series of files:

1. Drag a file containing coded data to the decode icon at the top left of the main window. There's no need to edit the header off the file, just use the whole file. If it is uuencoded *Attacher* will detect whether it is a complete uuencoded file or give a prompt for the next file in a series. If so continue dragging the series of coded files to the decode icon until *Attacher* detects the end of uuencoded data. The files must be dragged in order.

## Features

- *Attacher* will accept coded files direct from other applications so, for example, you can use the Save File option of a news/mail reader.
- *Attacher* will also transfer decoded files directly to other applications which accept direct transfer.
- Double-clicking a coded or decoded file will attempt to load it into an application that accepts that filetype. Note that some applications (e.g. Spark) do not take possession of files loaded this way so it is vital that the file is processed and saved elsewhere before *Attacher* is closed down – as all *Attacher* working files (kept in a sub-directory in the *!Scrap* directory) are deleted when it is quitted.
- Closing the main window part way through any operation will destroy the unsaved data – per Acorn's guidelines. To keep the data while closing the Attacher main window, hold Shift down when closing it. This will iconise the window on the pinboard allowing it to be re-opened by double-clicking select on the window icon.
- *Attacher* will put the RISC OS filetype at the end of any file it uuencodes. If the "add PC file extension" option is set it will also convert the RISC OS filetype to a PC style file extension and append it to the filename. Note this will use any DOSMap settings on your machine or, if none are set, its own defaults. In cases where more than one PC type is mapped to a RISC OS filetype, the first specified PC type will be used as the default extension for that type.
- *Attacher* will translate PC-type file extensions to RISC OS filetypes according to the host machine's DOSMap settings using the *TypeTrans* module. If no DOSMap is set *TypeTrans* has a default table which is used. This means that output files can easily be double-clicked to load them into other applications.



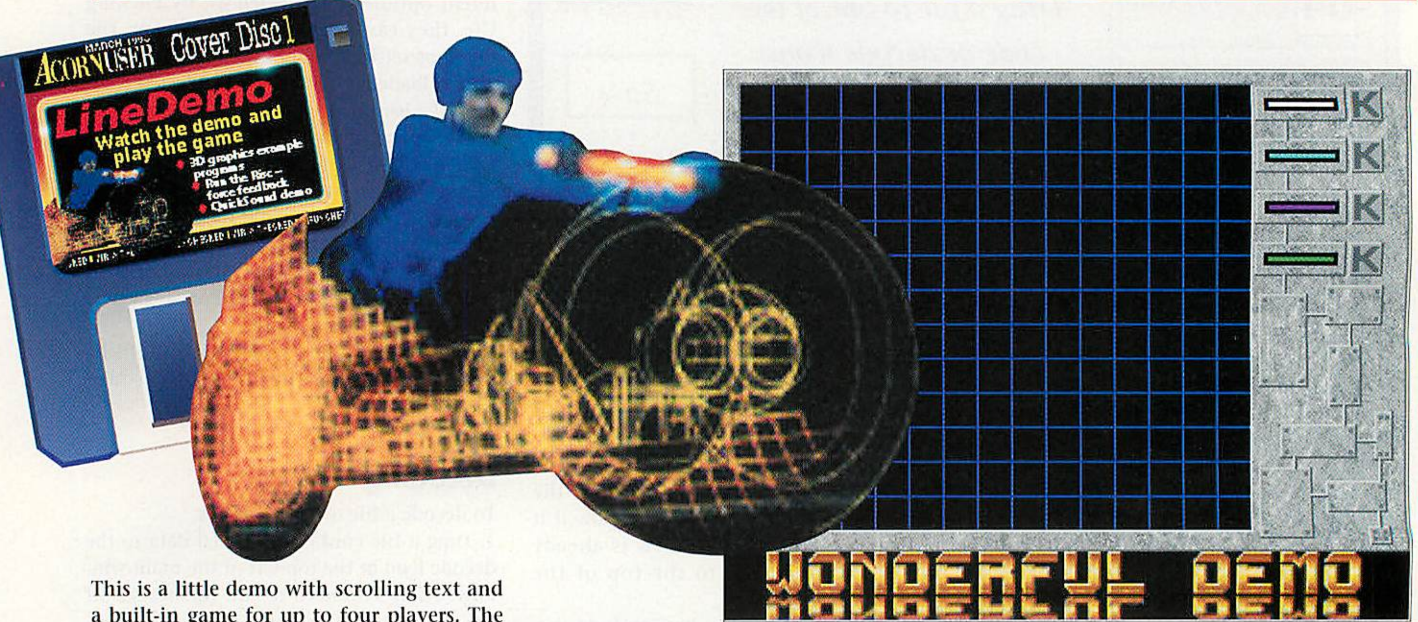
2. *Attacher* decodes the complete coded file.
3. Edit the supplied name as appropriate, then drag the file icon to a Filer directory display or to another application. Alternatively, enter the full pathname of the file and click select on the 'OK' icon. Additionally you can double-click select over the file icon to load it into an appropriate application (if known to RISC OS at the time of clicking).
4. If there are further files in the message they will be presented for saving in turn.

## Coding files

1. Drag the file you wish to encode to one of the code icons at the bottom left or middle left of the main window.
2. *Attacher* will encode the file.
3. Edit the file name supplied by *Attacher* as appropriate and drag the file icon to a Filer directory display or to another application. Alternatively enter the full pathname and click select on the OK icon. If you have the split option set, and the file is longer than the maximum length, *Attacher* will split the file and keep presenting new part-files for you to save until the whole file has been saved.

# LineDemo

Millennium Designs




This is a little demo with scrolling text and a built-in game for up to four players. The game instructions are included in the scrolling text but if you can't wait for that, here are the controls:

F1-F4 alter the control methods (while not playing a game) and Escape quits a game. F12 while not playing returns you to the desktop.

On Risc PCs and A7000s you may find the keys clash due to the use of PC-style keyboards.

| | Player 1 | Player 2 | Player 3 | Player 4 |
|---|---|---|---|---|
| Left | Z | V | , | Keypad 1 |
| Right | X | B | . | Keypad 2 |
| Up | Q | J | " | Keypad 6 |
| Down | A | N | ? | Keypad 3 |

## Extras

- *QuickSound* demo from Desktop Projects
- List of Bulletin Boards
- Sample clip-art from the *Topic Art* collection

## Regular items

- Two months worth of 3D graphics
- Mike Cook's force feedback software designs
- All the *INFO programs

## Disc information

The software on these discs has been compressed using *ArcFS 2* from VTi, and are opened by running a copy of *ArcFS* then double-clicking on the archive to open it. There is a copy of *ArcFS* on each disc.

Most software will run straight from the archive, but some programs may need to be copied out of the archive before being run, uncompressing them in the process.

Any program that saves a file to disc, for instance, will be unable to do so into the archives on the disc.

## Faulty disc?

If your disc is faulty, test whether it will verify by clicking with Menu on the floppy drive icon and choosing Verify.

If it fails to verify or is physically damaged you should return it to *TIB, TIB House, 11 Edward Street, Bradford, Yorkshire BD4 7BH.* If it verifies successfully return it to the *Acorn User* editorial office at the usual address.

The *Acorn User* cover discs have been checked for viruses using *Killer* version 2.800 from Pineapple Software.

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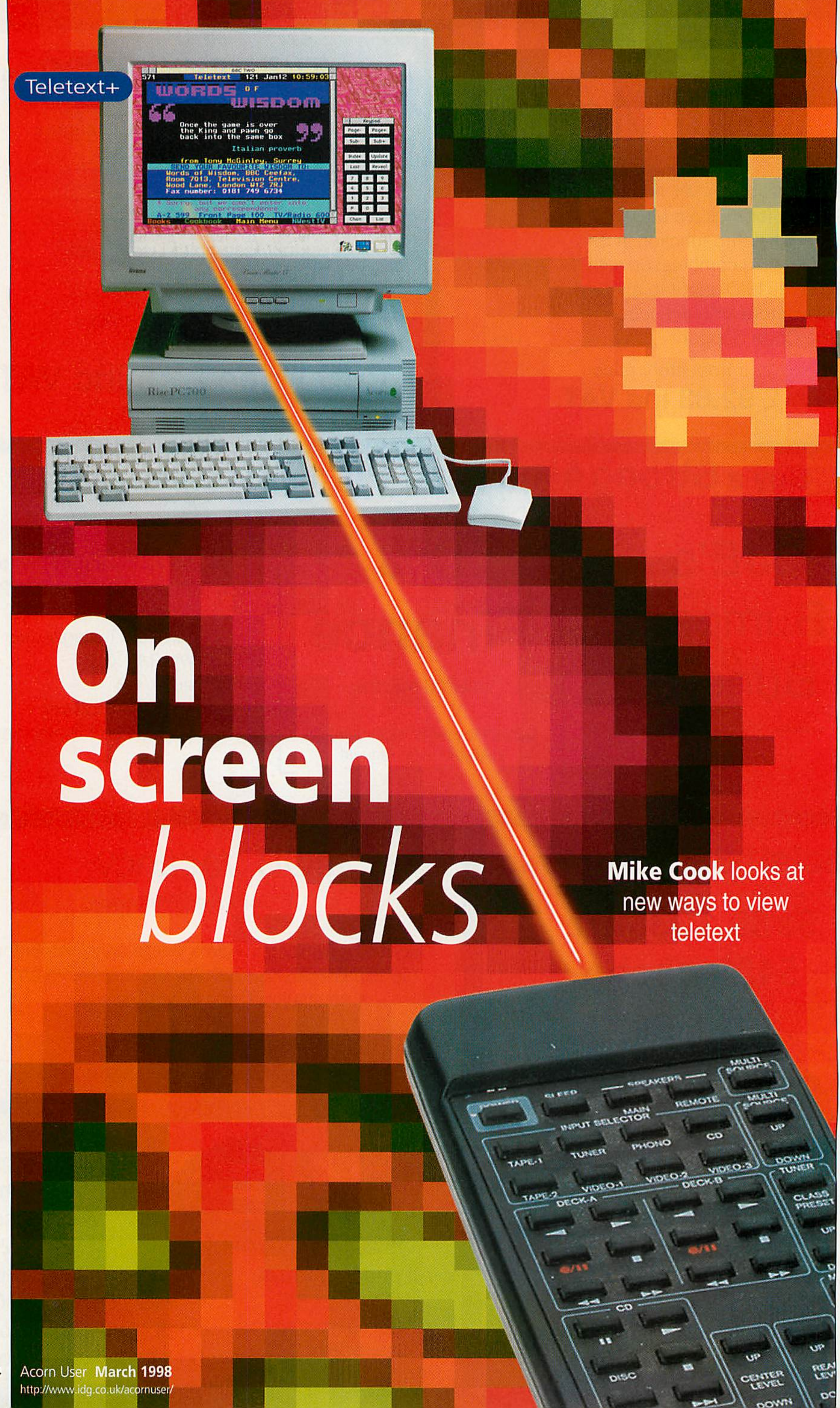

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REVIEW

Teletext+




# On screen *blocks*

**Mike Cook** looks at new ways to view teletext

Teletext was born in the mid '70s when new, cheaper memory chips meant it was possible to have an affordable 1K of memory. It was designed around squeezing the maximum out of a display from this measly amount of memory and with a few tricks and cunning wheezes they did a good job. Text, colour, graphics and flashing effects are all included.

With universal Internet access is there a place for Teletext? I tend to use it only to look at the football results and what's on TV. However, *Teletext+* from Octopus Systems might make you change your mind and look again at this free conduit of information. By integrating the teletext system with the processing and storage power of today's modern computers, it can breathe new life into the system. This software requires that you have a teletext card running on your system and it supports eight different models from various manufacturers, Octopus can even sell you one if you want.

So what will it do? First off it will allow you control of the teletext system in the conventional manner using a simulated handset. Then you can save the page in a number of different formats: Data, text, Impression DDF and sprite. It can use the incoming time display to set the computer's clock to second accuracy and set an alarm to remind you that a particular show is about to start. However, it is in the page caching and searching that *Teletext+* starts to lift the performance of the entire system.

The biggest problem about teletext is its speed, it can take up to 20 seconds to access a page, what *Teletext+* does is to secretly grab pages while you are not looking or working on something else and store them for your later instant retrieval. Unfortunately it has to do this one page at a time, it would be great if it could grab the whole teletext database in one lump but that would need specialist hardware and most hardware cards are designed using TV components. This means that page caching is not effective until the system has been running for a while, although on start-up old cached pages are available.

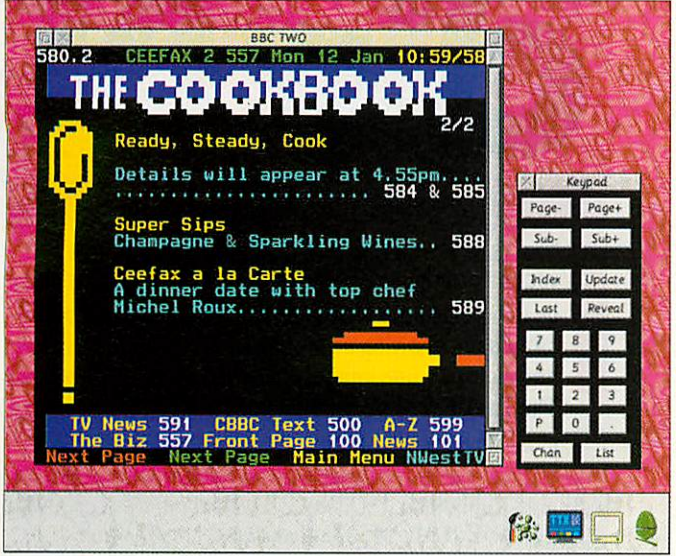



The caching works in two ways. If you are looking at a page with lots of sub-pages, like the 14 pages worth of football fixtures, you don't have to wait glued to the screen for the page you are interested in to come round, just do something else and then come back and flick through the sub-pages instantly. The other way that caching works is that *Teletext+* generates a list of the pages you have visited in the past and caches them giving priority to the most often visited pages. That means that as you use the system it becomes increasingly efficient.

However, a great increase in efficiency can be gained when these cached pages are used, along with a script file, as a database that can be automatically searched for keywords. The keywords can actually be more than one word so you can search for *Manchester United* without getting hits for Newcastle, Leeds and Dundee.

To make the searching even more efficient it is restricted to groups – a group is a number of predefined pages. In that way you can restrict searches to news pages, program listings or sports. To refine the search even more there is an after command so that you only search after a certain word has been found. For example in a cinema listing you might only want to search after the name of your town has been given.

One extension of the searching is the alarm. You give it some key words from your favourite viewing and listening and it will search the 'What's on' pages. When a match is found it will bleep and show you the details of the program when it's about to start. If you have some optional speech synthesis software it will even speak the name of the channel.




Another feature of *Teletext+* is logging. This allows you to save values onto the disc without saving the whole page, with this you can monitor the fluctuations of share prices or currency exchange rates. These can be further analysed by saving the data in Apricote format for use by the Apricote Studios shares software.

That's not the only way that *Teletext+* can be integrated with other pieces of software. For example, clicking on a Web address on a teletext page will pass the information on to a browser if running and clicking on an e-mail address will cause your mail reader to open a send mail with that address. It will even dial telephone numbers through the computer's sound system.

I found the 52 page manual to be well written, it even has an index, and it was quite easy to find out what you wanted to know. The software appears to do what it claims and I did not have any trouble with it. I think that this software opens up a new lease of life for this, often neglected, channel of broadcast information. AU

## Product details

| | |
|---|---|
| Product: | Teletext Plus (7.03) |
| Price: | £39 Supplied with Teletext cards or External Teletext adaptors for £169. Prices inc. VAT & postage |
| Supplier: | Octopus Systems |
| Address: | 9 Randwell Close Ipswich IP4 5ES |
| Tel: | 01473-728943 |
| Fax: | 01473-270643 |
| E-mail | teletext@octosys.co.uk |
| WWW: | http://www.octosys.co.uk |
| Hardware requirements: | Teletext adaptor |



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|---|---|---|---|
| IDE | 16x speed drive. | £79.00 | £102.23 |
| IDE | 24x speed drive. | £89.00 | £113.98 |
| IDE | Four disc, 8x speed, Auto-changer drive. | £79.00 | £102.23 |
| Parallel | 16x speed, Parallel Port drive. | £189.00 | £231.48 |
| Parallel | Four disc, 8x speed, Auto-changer drive. | £169.00 | £207.98 |
| SCSI | 24x speed, Internal drive. | £125.00 | £156.28 |
| SCSI | 24x speed, External drive. | £175.00 | £215.03 |

## CD-ROM Towers



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|---|---|---|---|
| SCSI | 24x speed, Six drives. | £920.00 | £1095.10 |
| SCSI | 24x speed, Four drives. | £720.00 | £860.10 |



## CD-Recorders

(Acorn / PC writing software included.)



| | | | |
|---|---|---|---|
| SCSI | 4x speed writer, SCSI card, Internal drive. | £399.00 | £478.23 |
| SCSI | 4x speed writer, SCSI card, External drive. | £449.00 | £536.98 |
| SCSI | 4x speed writer, Internal drive. | £329.00 | £395.98 |
| SCSI | 4x speed writer, External drive. | £379.00 | £454.73 |
| IDE | 2x speed writer, Internal drive. | £349.00 | £419.48 |
| Parallel | 2x speed writer, External drive. | £399.00 | £478.23 |

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| | | | |
|---|---|---|---|
| SCSI | CDBrick, 4GB, 24x speed CD-ROM drive. | £979.00 | £1159.73 |
| SCSI | CDBrick, 9GB, 24x speed CD-ROM drive. | £1479.00 | £1747.23 |
| SCSI | Eesox 'Fast' SCSI Card. | £125.00 | £156.28 |
| SCSI | PD System, One disc, Internal. | £287.00 | £346.63 |
| SCSI | PD System, One disc, External. | £337.00 | £405.38 |
| | PD Disc. £26.00 £26.00 Box of ten. | £240.00 | £240.00 |
| | CDs, Blank, Box of ten. | £20.00 | £27.03 |

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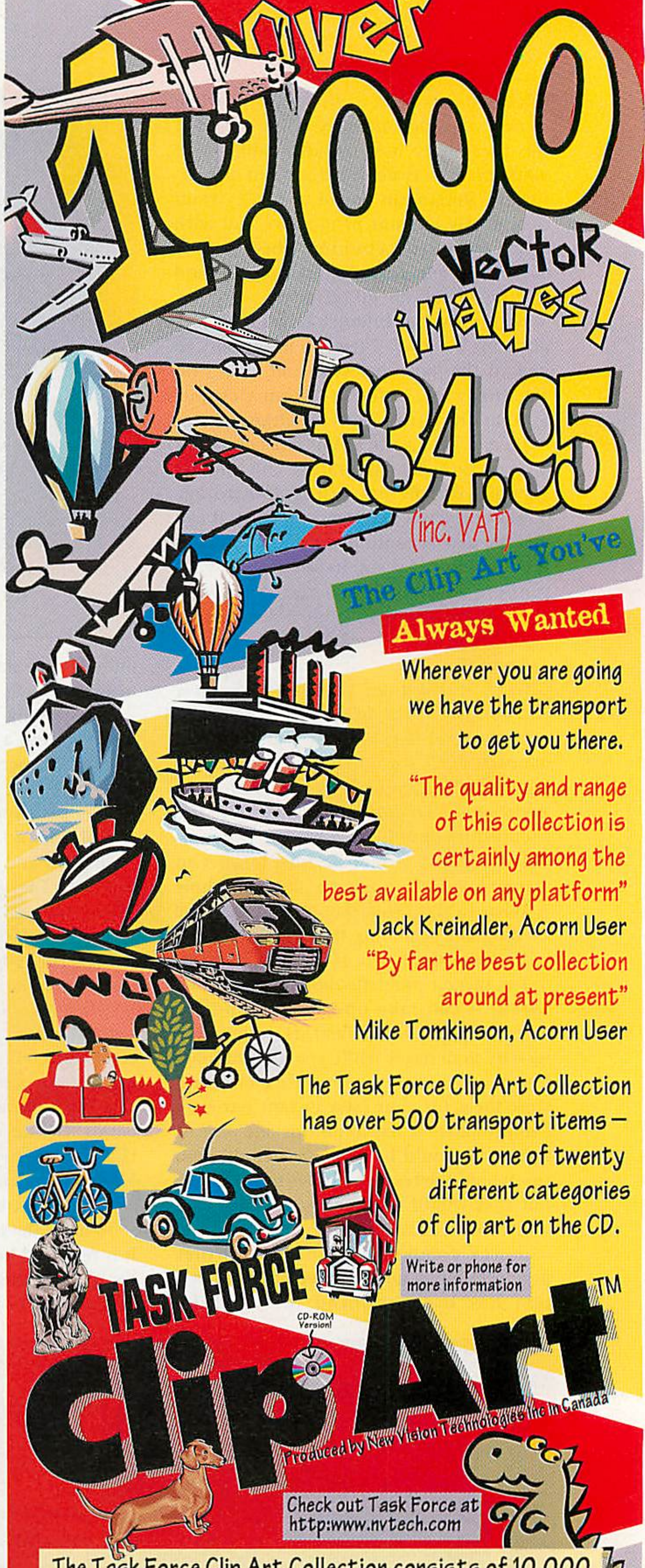
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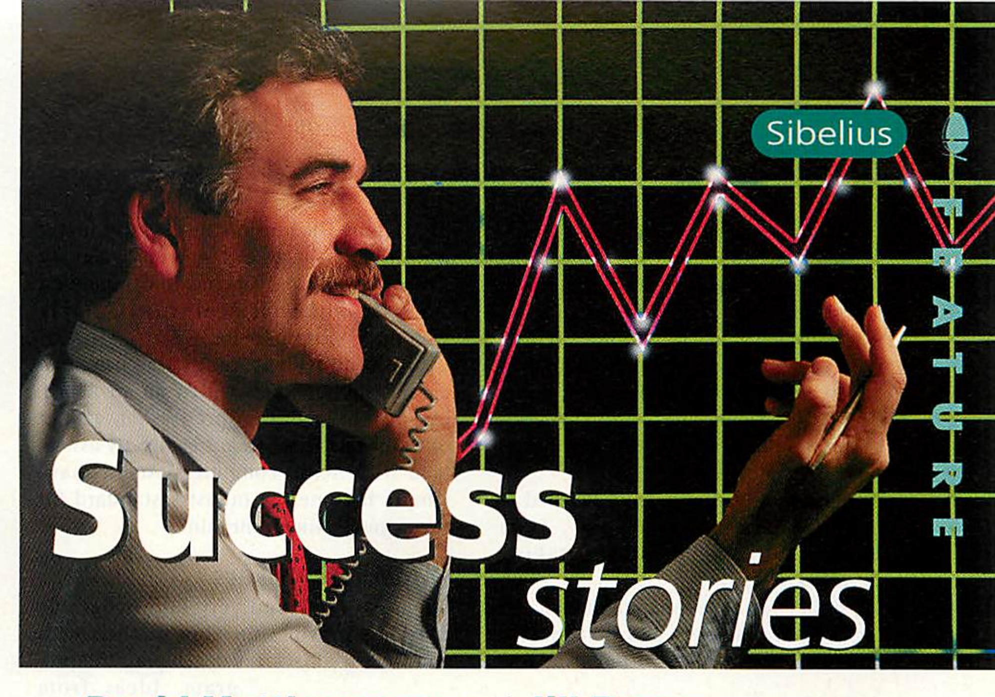
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**David Matthewman** and **Jill Regan** went to Cambridge to talk to Ben Finn of Sibelius Software

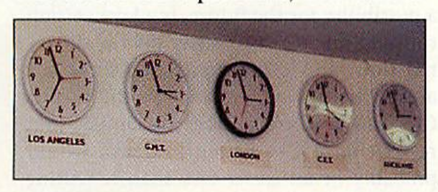
Different people see films for different reasons. Take the recent film *GI Jane*, for example. Fans of *Alien* and *Thelma and Louise* will watch it because it is a Ridley Scott film. Demi Moore fans will watch it because of a certain reputation the actress has acquired. And Acorn fans will watch it because the music was scored on an Acorn computer.

Naturally, it was written on *Sibelius*. It is not alone – such is the popularity of the score-writing program among film composers that Sibelius Software now have an office in Hollywood. Among Acorn companies, that has to be unique.

## An international success

Of course, on *Acorn User's* budget we couldn't fly off to California, so instead we went to call on Ben Finn at Sibelius's Cambridge office. About 15 years ago an area of Cambridge called the Kite was 'redeveloped' – in other words, the council levelled it and built a shopping centre and offices on the site, re-christening it the Grafton Centre. Sibelius Software are at the apex of this area – literally, in fact, as the triangular offices lie at the corner of two streets opening onto the centre.

Even here you're reminded that Sibelius are a world-wide operation. Five clocks adorn the wall of the offices showing the time in different places around the world. This causes a few problems, Ben himself has rarely spoken to his Aukland distributors – they have a healthy fax and e-mail relationship – and staying in touch with the Hollywood office causes some midnight oil to be burned. People in the Cambridge offices have what Ben describes as 'a UK day followed by a Los Angeles day in the evening'.




Sibelius Software have a network of dealers – mostly in England but many of them scattered across the world. Because they tend to sell computers as well as software, they have become something of an expert on shipping Acorns to far-flung countries. Sometimes Sibelius supply Acorn computers to companies that aren't actually going to run *Sibelius* at all, simply because they alone knows the ins and outs of shipping to, say, Singapore.

## Niche software

*Sibelius*, and we mean this in the nicest possible way, is the seminal example of niche software. You write music scores with it; that's what it's designed for and that's pretty much all it does. It has MIDI input and output facilities, but they're geared towards score-writing.

'There is quite a divide between score-writing software which is mainly used by 'Classical' people, and MIDI sequencers which are mainly used by 'rock and pop' people,' Ben explains. 'The problem with the sequencer market as opposed to the score-writing market is that there's more money in the sequencer market. There are a lot of professional MIDI sequencers out there – like *Cubase* and *Logic* – and they're all very, very good.

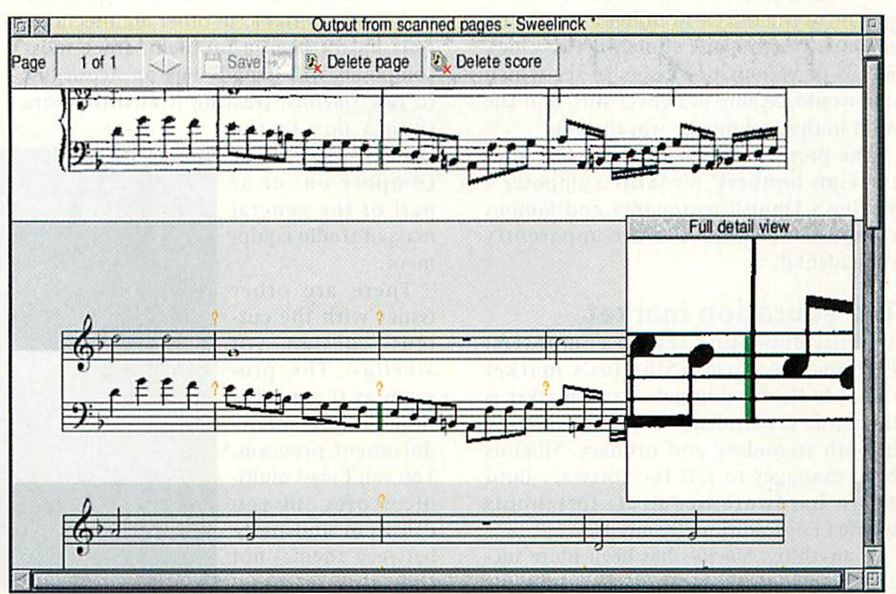
'While we can't really sell *Sibelius* to people who just want to do sequencing, there are a lot of people out there who want to do both that *and* score-writing. For instance, they may want to play a score in on a MIDI keyboard and then use *Sibelius* to print it out. But people would only want it if they wanted the score-writing side. I don't think anyone would be tempted to buy an Acorn plus a sequencer in preference to, say, *Cubase* on the Mac.'

But for score-writing *Sibelius* is outsold only by *Finale* on the Mac, and Sibelius are far more profitable than Coda, the publishers of *Finale* who last year lost $1.8 million. Don't let people tell you that the program can't be popular because it doesn't run on a PC. It *is* popular, and Sibelius are selling Acorn computers to run it on – an estimated 7 per cent of Acorn computers sold world-wide, outside the education market.

In fact, the *Sibelius* market is so much of a niche market, it isn't really a part of the main Acorn market. With most other Acorn companies you feel that the companies' customers are broadly speaking the same set of people. You don't get that feeling from Sibelius – *some* of the users are from the Acorn market, certainly, but most run *Sibelius* and probably little else on their Acorn.

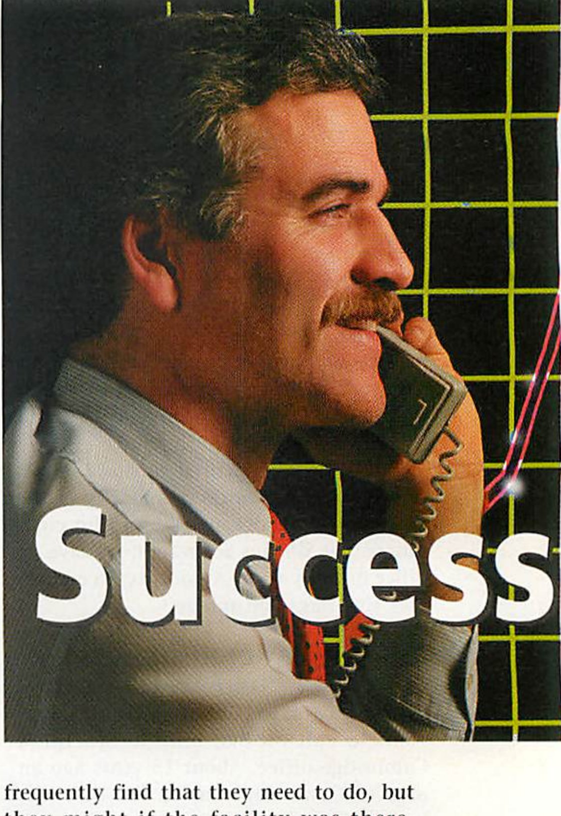
## Slow beginnings

The Finn brothers probably need little introduction. Ben and Jonathan Finn, ex-choristers in King's College Choir, are twins who share a passion for music and computers. *Sibelius* had a long gestation period; the Finns first considered it in the twilight of the BBC Micro, although by the time it came to be written the Archimedes had arrived. It wasn't until 1993 that *Sibelius 7* was actually released, though, ➤




Ideas from users are incorporated into Sibelius, and updates are released every year



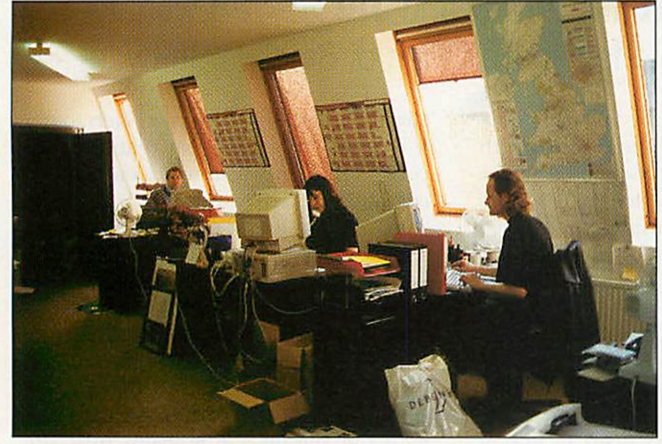




and Sibelius was launched as a company.

'We'd hawked *Sibelius* round various publishers and software houses for a couple of years,' explains Ben, 'because we didn't really have any intention of selling it ourselves. But none of them wanted to sell it because the publishers didn't know anything about computers and the computer people didn't know anything about music.'

The Finn brothers reluctantly decided to do it themselves, in a small way. Then sales snowballed very quickly, taking them rather by surprise.

'We didn't really know much about the music software market,' admits Ben. 'We didn't really know what other products were out there. It just turned out that our program was a lot better than the competition; we had very little trouble in selling quite a lot of it, even in the first year.'


The Sibelius office in Cambridge

Speed was crucial, and motivated two decisions; writing *Sibelius* on the Archimedes, and writing it in machine code: 'We decided that any time you did anything to the score, the whole score had to re-format because otherwise you'd end up with all sorts of glitches like notes in the wrong place, and that this had to redraw to the screen in under a tenth of a second. We did our sums on the clock speeds of various processors to see which one would be able to deliver this, and the ARM in the Archimedes was the one.'

The program was named *Sibelius* after the Finn brothers' favourite composer – Sibelius's Finnish nationality and famous composition *Finlandia* are apparently coincidental.

## The education market

*Sibelius* don't just sell to composers. Perhaps the closest Sibelius's market comes to the 'traditional' Acorn market is the music departments in schools that use it, both secondary and primary. Sibelius even manages to sell the software (and Acorn hardware to run it) to schools whose LEAs traditionally buy PCs.

If anything, *Sibelius* has been more successful in higher education. It is now *the* standard score-writing program at the prestigious UK music colleges. Graduates from these colleges often go on to buy an Acorn system from Sibelius to compose on – a sales outlet for Acorns that simply wouldn't exist otherwise.

'It was difficult at first getting people to accept this software written on an Acorn, but people in Britain pretty soon caught onto the fact that *Sibelius* is directly associated with Acorn computers. Acorns have simply become the industry standard for music publishing in Britain.'

## Input from users

Sibelius's large and very knowledgeable user base provides the Finn brothers with welcome feedback for developing the program. Ideas from users are incorporated into *Sibelius*, and updates are released every year.

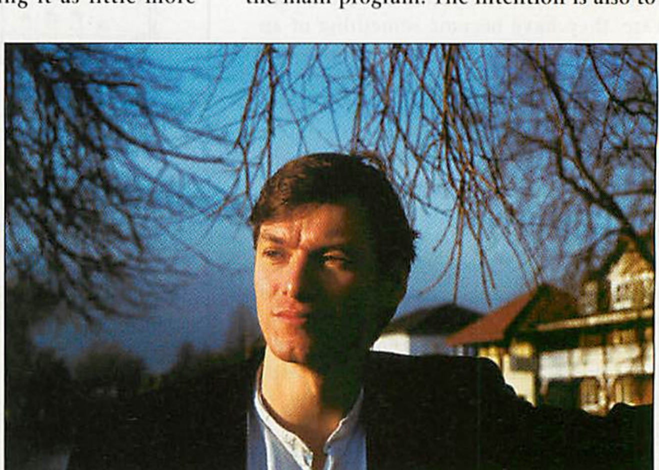
'Requests are getting more and more esoteric, and harder to incorporate into the program, because people are asking for things that the program was never really designed to do. Things like, for example, the sequencing side of the program. *Sibelius* is now very fully-featured, and pretty much covers what people want in a whole range of different areas.'

## The next stage

*Sibelius* was conceived and written in the days of the ARM 2 and ARM 3. In order to get the desired performance from the program, the Finn brothers felt that they had to write it in hand-coded ARM assembler. Higher level languages simply didn't have the required speed.

Obviously, this means that the program isn't easily portable to other architectures. This hasn't been a problem, since most composers will happily buy an Acorn just to run *Sibelius*, treating it as little more than a box in the corner that they compose on, or as part of the general mass of studio equipment.

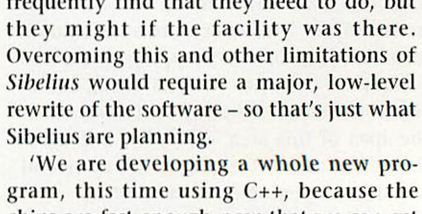
There are other issues with the current design of *Sibelius*. The program as it stands is inherently a single-document program. You can't load multiple scores, so you can't cut and paste between them – not that this is something that composers frequently find that they need to do, but they might if the facility was there. Overcoming this and other limitations of *Sibelius* would require a major, low-level rewrite of the software – so that's just what Sibelius are planning.


Ben Finn

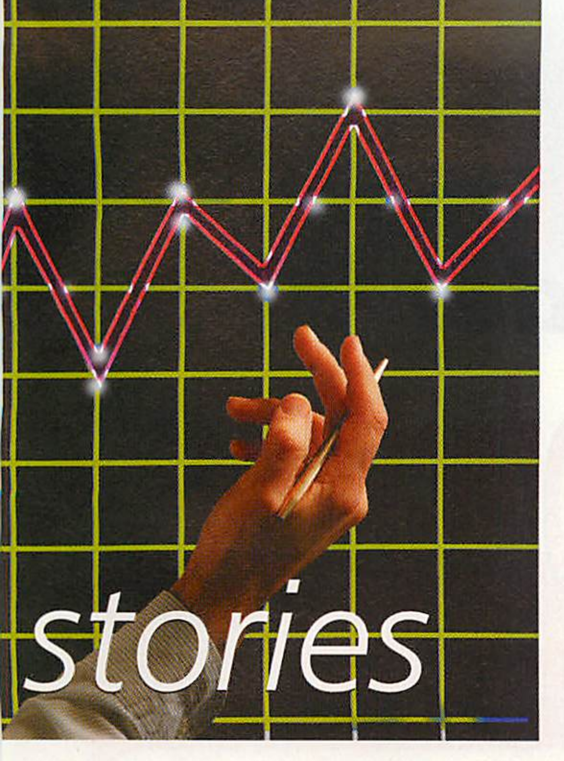
'We are developing a whole new program, this time using C++, because the chips are fast enough now that we can get away with that. It may be slower than *Sibelius 7*, but on a StrongARM chip the difference will hopefully not be noticeable.'

One path not taken, but which remains a possibility for the future, is a Java version running on NCs. Currently Java is simply too slow, and very primitive in some key areas, but this may change in the future. C++ and Java are sufficiently similar that re-writing a C++ version in Java would probably be an easier task than re-writing in C++ in the first place. And, as one of the very few music publishing software writers, Sibelius are keen to break into the home market eventually, with people being able to run *Sibelius* on their TVs.

The intention is to make *Sibelius* a more modular program, with third parties contributing plug-ins that will perform a particular specialised area of score-writing that Sibelius themselves don't have either the knowledge or the time to write into the main program. The intention is also to






support a scripting language as an easier (if slower) way for people to write extensions. Ben expects there to be a lively market in both scripts and plug-ins.

## Sibelius on the PC?

One obvious consequence of re-writing *Sibelius* in C++ is that it will become much more portable to other platforms. In fact, it turns out that the Finn brothers are hoping to make a version that will run on the Acorn, Mac and PC, with files being interchangeable between them (and, obviously, with older versions of *Sibelius*).

At this point, alarm bells will start to sound to *Acorn User* readers. Sibelius would not be the first company to make their software multi-platform, and then find that, in fact, the Acorn part of their business wasn't as important as the others. Ben doesn't think this is going to happen, though:

'We're mostly interested in a cross-platform version not because we want to sell PCs or Macs, but because of the international market. While we have no trouble selling Acorns inside the UK, it's always been a struggle outside the UK. America is the tough nut to crack, and I think it's going to be impossible for us to sell *Sibelius* in a big way in the US unless we have at least a Mac-compatible version.

'We've had a very positive reaction from our existing customers to this news. They're all very happy with their Acorns, because Acorns are so reliable and easy to use, but it is a sticking point when they work with other people who have Macs and PCs, because they want to be able to exchange files with these people. So even if *Sibelius* were to run less well on Macs and PCs, the compatibility would give us an edge.'

Expect son-of-*Sibelius* to appear around the end of the year. And expect it to make waves in the music press.

## Marketing

You will have seen Sibelius adverts in *Acorn User*. Ben puts them in from time to time, sometimes, one feels, more as a nod to the Acorn community than because they generate many sales. The real money comes from selling to the music professionals, most of whom have never used a computer in their life, and have an inertia against the adoption of new technology.

'Our typical user is a middle-aged professional or semi-professional musician who's never had a computer before. The Acorn they get is their first computer. *Sibelius* is the first software they've ever used. It's ideal because they can learn it from scratch in a few days.

'This is why, even though our software is going platform-independent, we have no intention of selling PCs or Macs to anyone ourselves. We will only sell Acorns because we know that they're reliable and it's not too much hassle. If we were to go down the line of selling PCs it would just be a complete nightmare, and we'd rather advise people not to buy them.

Sibelius advertises in the professional music press. It gives leaflets out in music shops, and Ben and Jonathan regularly tour the country giving demonstrations. They tour other countries too; coming up are music shows in Los Angeles and Frankfurt. Recently Sibelius have been targeting 'big names' in Hollywood in a concerted effort to get film composers using the software as standard. *Sibelius 7* recently added SMPTE to its feature list, allowing film composers to synchronise MIDI playback to the time-code on a video.

An advert for *Sibelius* has also appeared regularly in, of all places, *Private Eye*. 'It's been very successful. Among the readership of *Private Eye* are moderately well-off people who have an interest in music. It just shows that there is a mainstream market for things like this. We also considered advertising on Classic FM, but that was very expensive, and we decided that the typical Classic FM listener was not a musician.'

And the typical *GI Jane* watcher probably isn't an Acorn fan, either. But, given the choice between second-rate Demi Moore, third-rate Ridley Scott and first-rate Acorn software, we know which excuse we'd use for having seen it. AU


Jonathan teaching students at the Royal Academy of Music

# Company profile

Since it was started in 1993, Sibelius has grown from a two-man operation to a company employing 15 staff with offices in Cambridge, London and Hollywood. It is still run by Jonathan and Ben Finn (Jonathan heads the programming team in London).

Here's the full staff list:

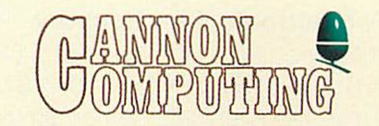
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|---|---|
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| Robin: | UK Marketing Manager |
| Robert: | Sales & International Manager |
| Marty: | US Manager |
| Michael: | Technical Consultant |
| Simon, Yasir and Darren: | Programmers |
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| Emma: | Sales Processing Manager |
| Jo: | Office Manager |
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Products: *Sibelius 7* (£888 + VAT), *Sibelius 7 Student* (£399), *Sibelius 6* (£99), *Junior Sibelius* (£49)

*Sibelius* also has a user group called Opus co-ordinated by Ian Beswick.
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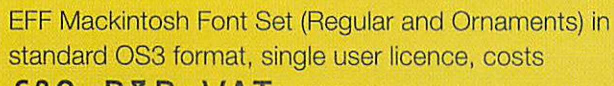
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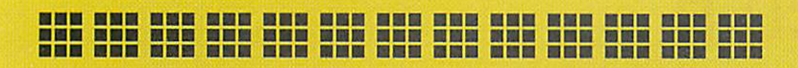
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# Wide range of resources

**Steve Turnbull** goes pot-holing into the advanced !Boot

In the first part of this series on the *!Boot* structure we looked at how a machine that uses it goes through the entire sequence. In this second part we will examine the *Resources* and *!System* directories in more detail.

The *!Boot.Resources* directory has become the repository for everything that might be needed by more than one application. As a minimum you'll find the *!Fonts*, *!Scrap*, *!System* and *!Configure* applications there, but there's more:

*!ARMovie* which contains all the resources for playing and recording Replay and other movie formats; *!Internet* and *!InetSetup* containing Acorn's Internet connection software and configuration; *!Java*, if you have it, the new language interpreter can be used for the Internet but doesn't have to be, complete applications can be written in it; *!Unicode*, the resources needed for implementing 16-bit characters allowing support for pictographic languages such as Kanji.

These are the official ones, personally I add one or two others: *!JFShared*, the Basic Library routines for programs based on Justin Fletcher's Basic Library; *!SerialDev*, the block drivers used by various programs; *!ZapFonts*, a directory of special format fonts used by *!Zap* and other programs.

And finally, *!CCShared*. This is slightly problematical but the dongle-free versions of Computer Concept's *Impression* suite don't mind if you move their shared directory out of *!System*, where it certainly doesn't belong. Otherwise, if you're still using a protected version, you must re-install it when the new *!Boot* structure is added to your machine, which may do nasty things to your *!System.!Boot* file.

When your machine boots up normally every application in the *Resources* directory has its *!Boot* file run which allows it to set up necessary system variables so that other applications can access it easily.

## A new !System

The *!System* directory has been changed quite dramatically in the new *!Boot* structure, to the extent that the *!SysMerge* program no longer works properly – it was beginning to show its frailties before, now it's worse than useless because it pretends to do something but probably won't have done what you either wanted or expected.

From its inception the *!System* directory was for holding relocatable modules, either upgrades on ROM ones or for brand new ones that add functionality to the machine. It had the *Modules* directory which initially was the only one. Then came the *Modules.Toolbox* subdirectory, then there was the *Modules.Network* and then *Modules.Network.URL* and so it went – not forgetting *Modules 310support* for automatically loading useful modules on the A310.

However, when Acorn designed the new *!Boot*, their aim was to produce a unified structure that would operate successfully and identically with any version of RISC OS and regardless of whether the machine was booting locally or from a network, using *!ShareBoot* or *!ArmBoot*.

Upgrades to RISC OS modules needed right from the start – for example the new Nested Window Manager – are loaded from a special directory in the Resources directory during the *PreDesk* phase. But those modules only needed under special circumstances are still held in *!System*, but no longer in *System.Modules*.

There are now a whole set of directories named after the operating system number: *310, 350, 360* and *370*. Each of these contains its own *Modules* directory.

When it boots up *!System* runs an application which checks the machine it's running on and prepares a couple of system variables to replace the old **System$Path**. First up is **Sys$Path**, which is defined as the original **System$Path**, it just points into the *!System* directory so would contain something like this:

```
ADFS::Tigger.$.!Boot.Resources.!System.
```

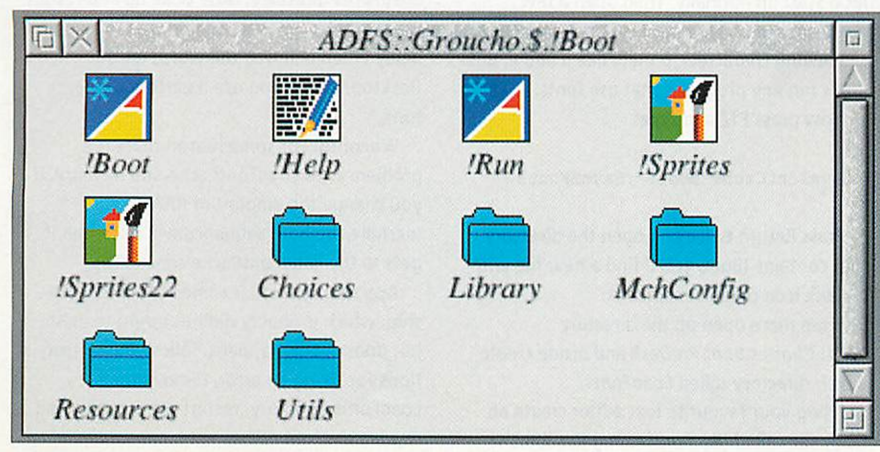
However **System$Path** becomes radically different, on a Risc PC with RISC OS 3.50 it becomes:

```
Sys:350.,Sys:310.,ADFS::Tigger.$.!Boot.Resources.!System.
```

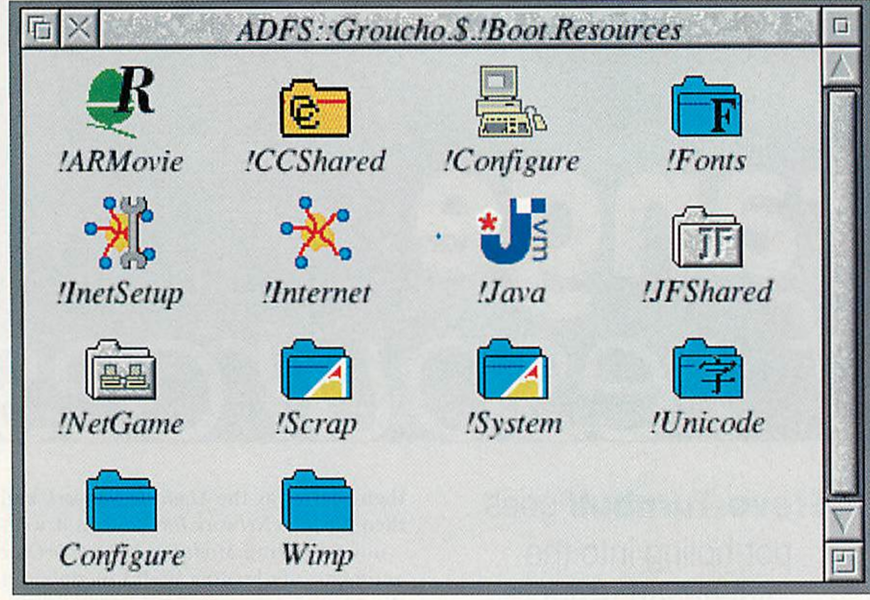
The reason for arranging the variable like this is to maintain compatibility with existing software. But supposing a program wants to load a module and issues the command:

```
RMLoad System:Modules.WibbleRM
```

Under the old set-up this would have simply looked inside the !System.Modules directory, but now it looks first at ➤




What you get in the advanced !Boot directory



Lots of resources for all

## Handy hint correction

Last issue I explained how you could copy the *HOff* utility from the *Utils* directory to the *Library* utility and having done that could stop a stuck hourglass by typing HOff at the command line.

Unfortunately the latest version of the Window Manager and HOff don't allow this to work. However it's easy to create a quick one line BASIC program to do the job.

Using your favourite text editor, create a new BASIC file called *HOff* and enter the single line:

```
SYS "Hourglass_Smash"
```

and then save it in the *!Boot.Library* directory. It will now work correctly by pressing F12 and typing *HOff*.

*!System.350.Modules*, then *!System.310. Modules* and finally *!System.Modules*. Whichever directory it found it in first would be the one it loads the WibbleRM module from.

On a machine with RISC OS 3.70 the **System$Path** variable is arranged to be even longer:

```
Sys:370.,Sys:360.,Sys:350.,Sys:310.,A
DFS::Tigger.$.!Boot.Resources.!System.
```

So you see the method is to look in the most recent OS directory first and then work back until the module is found. The reason is to allow modules to be arranged in the most logical position for the operating system. Suppose the original WibbleRM module wasn't StrongARM compatible but functioned correctly on OSes 3.10 to 3.60, it would be placed in *310.Modules* and all OS versions would be able to load from there.

However a new StrongARM compatible version of WibbleRM (that uses a special feature of the StrongARM and so doesn't work so well on older chips) would be stored in *370.Modules* and loaded from there is the processor and OS were upgraded.

It might seem unnecessarily complex, however it's transparent in use and allows for any eventuality – apart from the fact that, currently, only Acorn's *Installer* software for the new Internet packages actually handles these module directories correctly.

## Custom application

The *Resources:$Apps* directory on the iconbar provides a location for you to access commonly used applications. To add applications to this directory the simplest solution is just to drag them into the *Apps* directory on your hard disc. However there are much more versatile options than this which we'll look at now.

The *PreDesktop* file is where the action is for this, the second section from the bottom labelled

```
|Start Acorn !Boot 0.26 ResApps
```

There are either two or three lines all of the same format:

```
IfThere <file object> Then /AddApp
<file object(s)>
```

For example:

```
IfThere Boot:^.Apps then /AddApp
Boot:^.Apps.!*
```

This line checks whether an *Apps* directory exists on the boot disc, and if it does every application within it is added ➤

## Faster fonts

On those machines that allow fancy fonts in place of the system font it can take several seconds for the font manager to create and cache the fonts for drawing on screen. It can be irritating watching the hourglass turn on non-StrongARM machines, and even on those you can speed things up.

A very under-used option of the Font Manager is the ability to save and re-load the font cache. Under-used perhaps because it is quite restrictive in its use although speeding up machine start-up is a practical use.

The use of a saved font cache is restrictive because it cannot be done after the Font Manager has begun to cache fonts itself. In other words a saved font cache must be loaded before the Font Manager does any work, at the *PreDesktop* stage. However you can do it then and it's very handy because it prevents the waiting around for the fonts to be sorted out for drawing the desktop.

The first stage is to reset your machine and let it start up normally. Then open a few directories, perhaps with filenames that have interesting characters in them like « and ». But don't run any programs that use fonts.

Now press F12 and type:

```
SaveFontCache Boot:^.SavedFonts
```

Press Return twice and open the directory that contains !Boot, you'll find a new file with a blank icon called *SavedFonts*.

From there open up the directory *!Boot.Choices.Boot.PreDesk* and inside create a new directory called *LoadFonts*.

Using your favourite text editor create an Obey file called *!Run* containing this line:

```
LoadFontCache <Obey$Dir>.SavedFonts
```

And also drag the *SavedFonts* file into the *LoadFonts* directory. Now close up and restart the machine. You should find that there's no delay when painting the words on the Desktop even if you use a particularly fancy font.

**Warning:** For some reason there is a problem with LoadFontCache and memory. If you change the amount of RAM in your machine the boot sequence will fail when it gets to the LoadFontCache command.

Apparently there is some sort of relationship, which probably did not ought to exist, but does. If this happens, follow the instructions for fixing an error, remove the LoadFonts directory, restart the machine and re-save the font cache.

to the *Resources:$.Apps* directory using the *AddApp* command. In the new *!Boot* structure we also have the hook directories which contain software versions for the specific OSes, these are installed with:

```
IfThere Boot:Utils.RO350Hook.Apps
Then /AddApp
Boot:Utils.RO350Hook.Apps.!*
```

Which will override the versions in the *Boot:^.Apps* directory.

You can add your own file objects to the *Apps* directory very simply by putting in a new command along with the others. Suppose you have a word processor called *!Wordy* which is located in the *$.Applicatns.Wordy* directory you need to add a line like this:

```
IfThere Boot:^.Applicatns.Wordy
/AddApp
Boot:^.Applicatns.Wordy.!Wordy
```

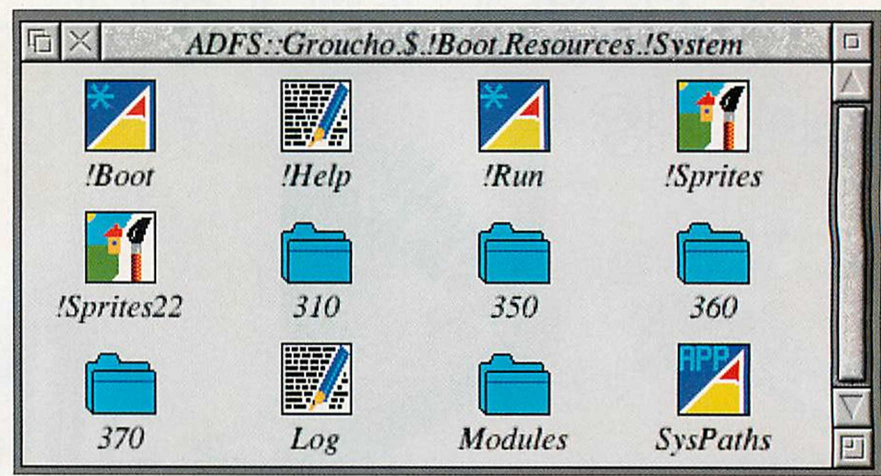
## Scrap cleaner

On PCs a vast quantity of hard disc space can be wasted with old temporary files scattered all over the place, it's important to clean them out regularly. The problem is far less significant on RISC OS, fewer temporary files are used, the applications tidy up after themselves and they are all in one place: *!Scrap*.

Another handy utility is a simple one line obey file which will delete the contents of *!Scrap*. Using your favourite text editor create an Obey file called *WipeScrap* and put in the following line:

```
Wipe <Wimp$ScrapDir>.* ~CFR~V
```

It's probably best to put this in the *!Boot.Library* directory and only run it when you're not using any other program. It's also feasible to have it set up as an Alarm to be run once per week in the middle of the night – that level of frequency is more than enough.




A variety of sources for modules

# Wide range of resources

## Making a mistake

It may happen that while editing your *PreDesktop* file you accidentally introduce an error which results in the boot sequence failing, crashing out before it's got anywhere useful.

You have two options: If the machine has gone into Supervisor mode there will be an asterisk and the flashing cursor waiting for you to type something. You can just type:

```
*Desktop
```

Then press Return to start up the desktop and give you control. Click on the icon for the hard disc that contains the *!Boot* structure and you should get a message about incomplete boot up. From there you can locate the *PreDesktop* file and correct your mistake.

If the machine hasn't gone into Supervisor mode and given you the command line you should press Shift+Control+Break, keep holding down the Shift key after the machine has rebooted. This will prevent the OS from running through the faulty boot sequence and should enter the desktop automatically. Once again click on the icon for the hard disc that contains *!Boot* and locate the *PreDesktop* file for correction. AU

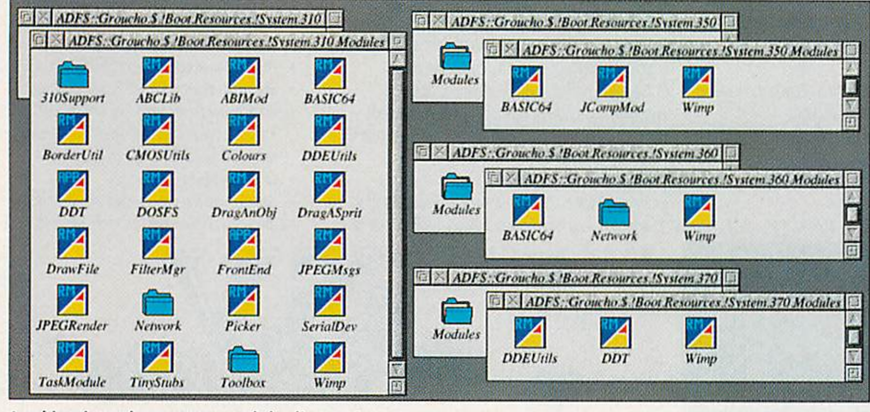
## Getting alarmed

Many people don't rate Acorn's *!Alarm* application, personally I find it invaluable for handling regular tasks on my machine – this is not to say it couldn't be better but I'm happy with it.

One of the problems with it, however, is getting it to run on start up. With the version in ROM it wasn't a problem there was a special configure option to get it going. But with the *!Boot* structure it's a little bit of a problem.

By default the application saves its Alarm file in *Choices:Alarm*, but this is unhelpful because it won't automatically run from there either. You can, of course, move the entire application into the *Choices:Boot.Tasks* directory and this works but fiddling around locating it among the various versions in Hook directories is also irritating.

The solution is to save the Alarms file in the *Choices:Boot.Tasks* directory instead. This ensures that *!Alarm* is automatically run with the correct Alarms file, you can then add alarms to run programs at various times – such as automatic connection to the Internet at quiet times such as 3:00am.




Looking into the system module directories




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| 5¼" Drive Power Splitter | £4.00 |
| 5¼" - 3½" Power Adaptor | £4.00 |
| Two way Printer Sharer (Cent. 36 way) | £13.00 |
| Two way Printer Sharer (D type 25 way) | £13.00 |
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| BBC Printer Cable | £7.00 |
| 9 way to 15 way Monitor Adaptor | £7.00 |
| **Original Acorn mouse** | **£27.50** |
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| **Standard PC serial mouse** | **£15.00** |
| **RISC PC Case Slice kit (PSU)** | **£110.00** |
| **RISC PC Case Slice kit (no PSU)** | **£85.00** |
| **RISC PC 2 slot Backplane** | **£34.00** |
| **A7000 2 slot Backplane** | **£39.00** |
| **Acorn Mugs (Pair)** | **£9.95** |
| **Acorn Grey Polo Shirt** | **£15.95** |
| **Acorn Parker Pen** | **£4.95** |
| **Casio QV10 Camera + Acorn Kit** | **£355.00** |
| **Casio QV100 Camera + Acorn Kit** | **£502.00** |
| **RISC PC Technical Ref Manual** | **£47.50** |

## MEMORY etc

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|---|---|
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| **A305 / A310** 4 - 8Mb | £185 |
| RISC OS 3 Carrier Board | £22 |
| MEMC1A Upgrade | £49 |
| **A400/1** 1Mb Pack | £38 |
| **A400/1** 4 - 8Mb | £185 |
| **A3000** 1 - 2Mb (expandable to 4Mb) | £46 |
| **A3000** 1 - 4Mb | £83 |
| **A3000** 4 - 8Mb | £185 |
| **A3010** 1 - 2Mb | £28 |
| **A3010** 2 - 4Mb | £49 |
| **A3010** 1 - 4Mb | £52 |
| **A3020 / A4000** 2 - 4Mb | £49 |
| **A5000** 2 - 4Mb | £80 |
| **A5000** 4 - 8Mb | £185 |
| **A540** 4Mb Card | £115 |
| RISC PC 1Mb VRAM | £55 |
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| **RISC PC / A7000** | |
| 4Mb SIMM | £20 |
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*Memory prices are currently fluctuating - please call for our latest price*
*We supply a full range of hardware and software please telephone for more details and a quote.*

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| Audio mixer board for RISC PC | £41.00 |
| 2Gb IDE Hard Disc | £130.00 |
| 2.5Gb IDE Hard Disc | £139.00 |
| 3.2Gb IDE Hard Disc | £159.00 |
| 4.5Gb IDE Hard Disc | £199.00 |
| 5.1Gb IDE Hard Disc | £225.00 |
| 6.5Gb IDE Hard Disc | £235.00 |
| 8.4Gb IDE Hard Disc | £319.00 |
| 2.2Gb SCSI Hard Disc | £189.00 |
| 3.2Gb SCSI Hard Disc | £249.00 |
| 4.3Gb SCSI Hard Disc | £269.00 |
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| **Impression Publisher** | **£139** |
| **Impression Publisher Plus** | **£250** |
| **Sibelius 7** | **£935.00** |
| **Sibelius 7 Student** | **£460.00** |
| **Sibelius 6** | **£110.00** |
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**SECOND HAND ACORN COMPUTERS**



# The art of ArtWorks Part two

This month **Nicholas van der Walle** of Astute Graphics delves further into the use of ArtWorks, looking at how to create realistic material effects

For the purpose of drawing, there are two major varieties of materials that may be portrayed; fully opaque and transparent. From here materials can be categorised further into levels of reflection (with total matt giving no reflection and a pure mirror giving 100 per cent) or the value of transparency. Whereas interpreting an object which possesses a number of these qualities in a photo is natural, drawing them is definitely not.

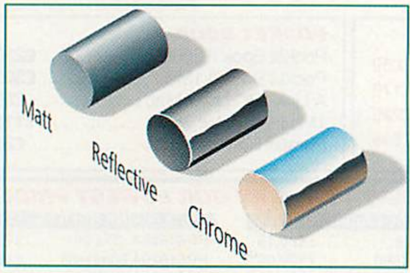



Figure I: Easily identifiable material types

Looking at how certain materials appear in reality enables an artist to replicate this onto a 2D piece of paper. Looking at Figure I it is easy to distinguish between the various materials without having to read the text. It illustrates how, by utilising different graduated fill and blending effects available within *ArtWorks*, it is possible to dictate to the viewer exactly the material type of the object, which may be critical in many illustrations especially of the technical variety.

## Laying on the matt

Taking the first of the objects in Figure I, I shall explain how a matt finish is achieved using *ArtWorks*. However, before I commence it is worthwhile to have a careful look at Figure II which shows three standard 3D objects arranged so that their conditions are identical. When I write of conditions, I am referring to such matters as the point of origin of the light source and its intensity level, material type and actual colour.

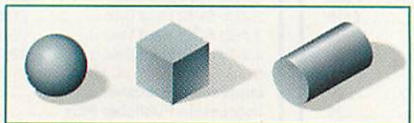


Figure II: 3D objects with identical conditions

In the case of Figure II, the conditions of each object are that the sun light source (a light source which produces parallel casting shadows on the object due to its infinite distance) is placed above and to the left of the object, and that the matt objects are black.

An example of such matt objects is the plastic case of a Risc PC (or failing that, most likely your monitor or keyboard case). Plastic is not normally matt but most plastic surfaces have been mottled or textured which causes all light shining on it to be diffused as it is reflected in many different directions on a very small scale.

Starting with the simplest object, the matt sphere as shown in Figure II, it is possible to just create the object using a single radial fill applied to a circle. In this case the radial fill would start at 10 per cent black and end up at 90 per cent black (try to avoid using extremes of colour such as white and 100 per cent black as this may often lower the realism of the image). However as the world is never as simple as that and I have to show-off, I chose to colour the sphere using blends.

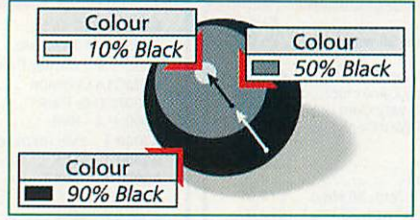



Figure III: The stages of blend utilised

Figure III shows the stages of the blend utilised. The object with 90 per cent black solid fill is the original circle that is the basis of the spherical outline, while the two inner circles at 50 per cent black and 10 per cent black are just scaled clones. When the three circles have been created and placed on top of each other in the shown order, then blend (with about 10 steps depending on the scale in which the illustration is to be used) first between the 90 per cent black circle to the 50 per cent black, then from the same 50 per cent black circle (now incorporated into an existing blend) to the final 10 per cent black top-most circle.

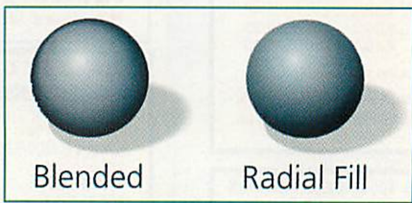



Figure IV: The difference between blended and radial fill

The result of all this effort is a single blended object made of three shapes. But it is not this that is important, rather the greater accuracy of shading as compared to a radially-filled circle posing as a sphere (see Figure IV). The difference is small at first glance, but when studied the two major differences may be noted:

(1) The blending method is not linear (in terms of colour change percentage) compared to a standard radial fill which equates to a more realistic shading pattern.

(2) Due to the radial fill starting off-centre to the centre of the sphere, the edge of the sphere intersects where the radial fill is still altering in shade. This is not the case with the blend as the 90 per cent black




start circle ensures that the outermost edges of the sphere is constantly 90 per cent black.

It is this attention to detail that either ensures that an object is realistic, or not.

## More of matt...

Continuing with the way in which matt-surfaced objects are drawn I will revert back to the two other items found in Figure II. It may be noticed that all object colours are percentages of black as the actual colour of the material is black and the light source is white. This is a critical part of matt-look objects. If, say, you were to create a dark green object with an orange light source then you would have to create a number of colours interpolated between dark green and orange.

This can be done by calculating intermediate colours or creating a blend of 10 steps, then exporting to *Draw* and back into an *ArtWorks* window or by using *Phantasm's* interpolate facility (selecting the Base colour as a dark shade of green using the colour picker and the End colour as orange again with the picker, then specifying 10 interpolations).

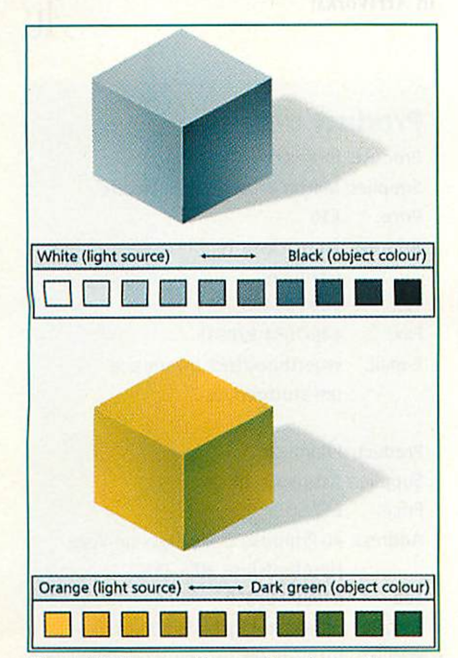



Figure IV: Compare the results when using different colour objects and light source

Figure V is the result as compared to the original matt black cube. All that was done was to substitute the corresponding level of black to white as compared to the level of dark green to orange for all flat and linearly/radially filled profiles. For example, a profile which was originally filled linearly from 10 per cent Black to 50 per cent black would now be filled from the second of ten steps from orange to dark green to the middle colour between orange and dark green.

When dealing with the cylinder, once more under normal conditions, first seen in Figure II, the interesting surface is that of the curved side. What makes it a little more complex is the fact that the apparent linear blend is not truly linear and that

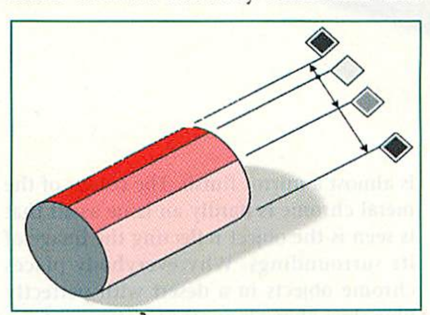


Figure VI: The cylinder's original profile

the blend goes in two directions (which is not really catered for in *ArtWorks*). This effect is created by intersecting the main object profile using Martin Würthner's *Intersect ArtWorks* additional module.

Figure VI shows the original profile (deep red) with its two intersected components overlaid (shown by the two tints or red) and the start and end colours for the linear fill for each profile (the colours in the diamonds). As can be seen, by referring to the cylinder in Figure II, the lightest part of the surface is nearer the top with a linear fill from 10 per cent black to 90 per cent black (the outer top edge) filling the top portion. This leaves a two-step linear fill for the lower portions. First the centre

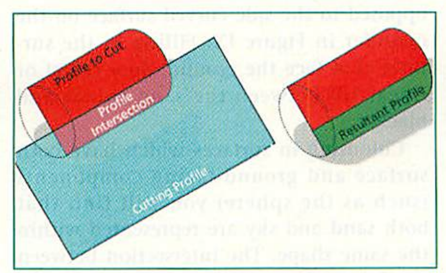



Figure VII: Before and after using *Intersect*

profile is filled from 10 per cent black to 50 per cent black and then the remaining lower profile leaves off from the last colour (50 per cent black) and ends up at the lower edge of the profile with 90 per cent black. In order to create these intersected profiles using *Intersect*, look at Figure VII. On the left is the original profile (Profile to Cut) overlaid with a Cutting Profile which completely overlaps the required intersection area (named Profile Intersection). Clone (^K) the Profile to Cut then select the Cutting Profile.

With only these two profiles selected use the new Intersect All command (^W), which will produce the Resultant Profile (in the right of Figure VII). If you wish a line colour around the whole original pro-

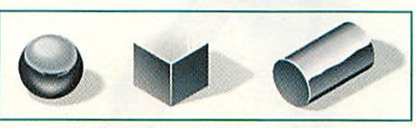


Figure VIII: The glossy finish

file then you will have to clone the original profile, give it a line colour and finally allocate a fill colour of *none*.

## Bringing out the shine

Taking the three basic 3D objects as seen in Figure II, the material for each has been altered to show a gloss (reflective) surface as opposed to matt (Figure VIII). The main visual difference is that there is a much greater contrast in the colouring techniques chosen with much less apparent linear or radial shading functions. However, the colours used are still predominantly shades of black.

Effects employed to portray a gloss surface are obvious edge and corner highlights, light streaks and sharp-edged reflected images (see the side curved surface of the cylinder in Figure VIII). Edge highlights can either be made with open path lines which have the light source colour employed as the line colour or by creating true closed paths which exactly follow the edge of the surface.

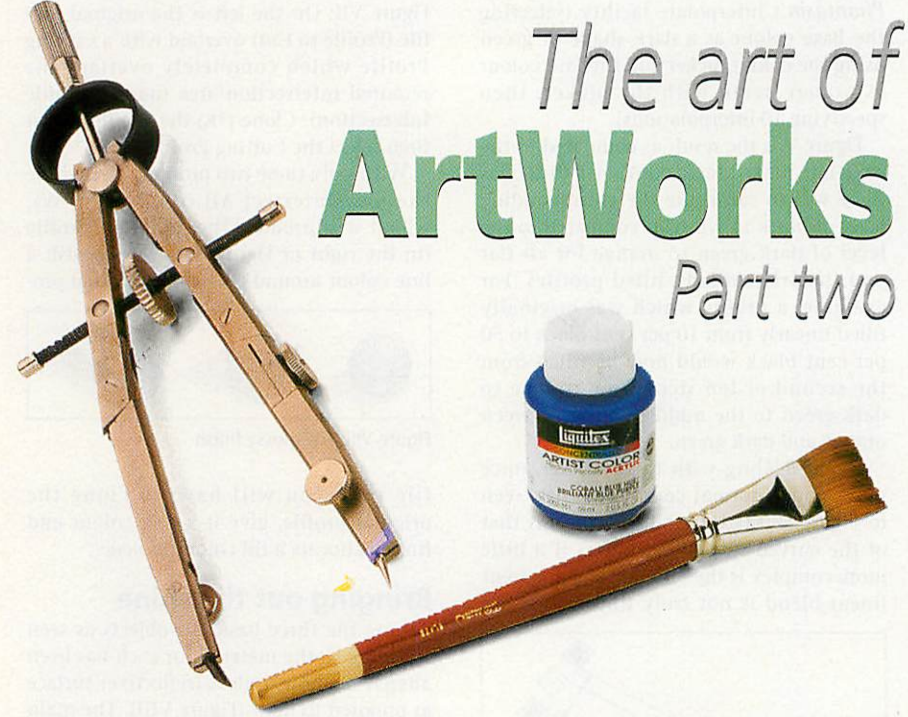
The advantage of the latter is that variable widths may be specified in conjunction with radial or linear fill which may be used to further emphasise a particular sharp corner. However, just creating lines is much quicker and is adequate in many circumstances.

Methods of creating such glossy effects are similar to those described earlier with the use of the *Intersect* module, as well as utilising blending as opposed to regular radial fills. Both methods are demonstrated in the sphere shown in Figure VIII. Another tip is not to create reflections with purely straight lines – real objects are very rarely free of slight undulations on their surface, therefore any reflection would also experience a small amount of distortion.

## Applying the chrome

Well, it had to happen. Whenever the subject of surface finishes is brought up, chrome *always* has to feature. Not for the reason that it is the most popular surface finish in reality, but rather that it represents an object of class and perhaps more importantly it allows the artist to proclaim ➤

# The art of ArtWorks
## Part two




their talent. Ego is everything.

Chrome is not such a hard finish to master – mainly due to the fact that there

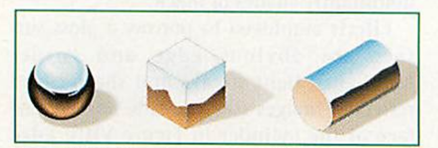


Figure IX: Getting the most out of the chrome-look

are so many examples in existence. Just look in any classic car book that happens to feature American automobiles from the '50s. Just to add to all other examples I am giving you Figure IX.

Looking at chrome-work in a rational manner, there is very little to distinguish it from a glossy surface other than the addition of the classic blue sky and sand colour. The reason for this is that chrome is almost a mirror finish. The colour of the metal chrome is hardly an issue as all that is seen is the object reflecting the image of its surroundings. Why everybody places chrome objects in a desert with perfectly blue skies above is another matter...

The two classic colours always used to represent chrome objects are approximately as follows;

• Blue Sky – 65 per cent cyan, 30 per cent magenta, 0 per cent yellow and 5 per cent key (black)
• Sand (Ground) – 0 per cent cyan, 20 per cent magenta, 40 per cent yellow and 15 per cent key (black)

When filling in surfaces facing the sky (top surfaces), use either lineal or radial fills from white to blue. You don't have to use the full extent of these start and end colours and in many circumstances it may be best to have the majority of the profile filled with either the white or blue. To illustrate this, see how much percentage blue of the linear fill is used in the cube as opposed to the side curved surface on the cylinder in Figure IX. Filling in the surfaces that face the ground, do a radial or linear fill between the sand colour and black.

Colouring in surfaces which have both surface and ground-facing components (such as the sphere) you will find that both sand and sky are represented within the same shape. The intersection between the two is always abrupt with lots of contrast between the end colour of black (from ground) and the start colour of white (to blue sky). Once again the intersecting line may not be perfectly straight or curved, but rather slightly rippled.

One final recommendation when illustrating chrome objects is to define the edges of the surfaces blatantly. Dark edges are used for the outer profile of the object (line colour of approximately 60 per cent black), while lighter streak profiles with dark small line widths are appropriate for 'internal' surfaces. See the cylinder in Figure IX.

### See straight through it all

There is one material type mentioned at the beginning of the article that hasn't been touched on yet – that of transparen-

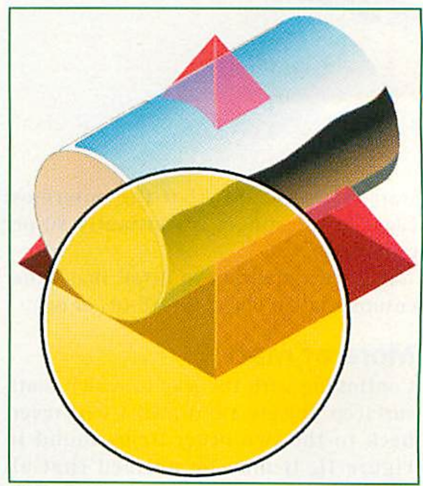


Figure X: The impossible in *ArtWorks?*

cies. There is a very good reason for this – *ArtWorks* can't natively handle them. However, recent developments means that help is at hand in the form of *Phantasm*. This product was borne out of the personal need to quickly create pseudo transparencies. Therefore I wish to leave you this month with a taste of what is going to be dealt with next month – see Figure X for the impossible in *ArtWorks*!

AU

### Further reading

Being completely biased, I have to give a mention to my website which has further free tutorials for *ArtWorks* users. Some are completely separate topics such as how to use *ArtWorks* to create desktop and website icons, while I also hope to spend some time elaborating on topics discussed in this series.

The tutorials may be found at:
http://www.astutegrfx.demon.co.uk/
It is also possible to e-mail me any comments or suggestions of topics for me to cover in later issues by sending messages to:
nick@astutegrfx.demon.co.uk

### Product details

Product: Intersect
Supplier: Martin Wüerthner Software
Price: £10
Address: Jahnstrasse 18, 71116 Gaertringen, Germany
Tel: +49-7034-928986
Fax: +49-7034-928915
E-mail: wuerthne@trick.informatik.uni-stuttgart.de

Product: Phantasm
Supplier: Astute Graphics
Price: £17.50
Address: 40 Primrose Close, Ross-on-Wye, Herefordshire, HR9 7RN
Tel: 01989-567350
E-mail: nick@astutegrfx.demon.co.uk
WWW: http://www.astutegrfx.demon.co.uk

# A3000 upgrades

**Memory**

| | |
|---|---|
| 1-4Mb | £49 (57.57) |
| 2-4Mb upgrade pack | £39 (45.82) |
| 4-8Mb | £99 (116.32) |

The above upgrades are all constructed on four-layer boards, as recommended by Acorn. Gold plated connectors are used for reliable contact with the A3000 main board. No soldering is required (except 8Mb). Full instructions supplied. Some older types of 2Mb board cannot be upgraded to 4Mb, but we offer a trade-in allowance. Please phone for details.

**Hard drives**

A range of internal hard disc upgrades is available. The upgrades simply plug into the internal expansion slot. Also suitable for the A3010.

| | |
|---|---|
| 80Mb | £99 (116.32) |
| 120Mb | £103 (121.02) |
| 170Mb | £109 (128.07) |
| 210Mb | £115 (135.12) |
| 340Mb | £125 (146.87) |
| 540Mb | £139 (163.32) |
| RISC OS 3 | £29 (34.07) |
| ARM3 (25MHz) | £69 (81.07) |

(Dealer fitting recommended for the ARM3)

# A3010 upgrades

**Memory**

| | |
|---|---|
| 1-4Mb | £59 (69.32) |
| 1-2Mb | £29 (34.07) |
| 2-4Mb | £49 (57.57) |

The 4Mb upgrade is constructed on a compact four-layer board and uses just two RAM chips. No soldering is required. Full instructions supplied.

**Hard drives**

A range of internal hard disc upgrades is available. The upgrades simply plug into the internal expansion slot. For prices, refer to the A3000 section.

**2Mb VRAM £73 (85.77)**
**ARM3 £69 (81.07)**
**RISC PC 32Mb SIMM £49 (57.57)**

# RISC PC

**SIMMs...** (Please ring for latest prices)

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|---|---|
| 4Mb | £9 (10.57) |
| 8Mb | £16 (18.80) |
| 16Mb | £26 (30.55) |
| 32Mb | £49 (57.57) |
| 64Mb | £165 (193.87) |

**16Mb SIMM to 32Mb upgrade £39 (45.82)**

(By upgrading your 16Mb SIMM to 32Mb you don't lose a SIMM socket. The original 16Mb SIMM must be returned to IFEL and the type must be suitable - most are. Please phone to check first or ask for our free leaflet.)

**RAM packs for upgradable SIMMs**

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|---|---|
| 16Mb-32Mb | £35 (41.12) |

The pack consists of 8 chips which plug into empty sockets. Instructions supplied, no soldering needed.

**VRAM modules...**

| | |
|---|---|
| 1Mb | £41 (48.17) |
| 2Mb | £73 (85.77) |
| 1Mb-2Mb upgrade | £41 (48.17) |

**128Mb SIMMs - POA**

## A5000

**Memory**

| | |
|---|---|
| 2-4Mb | £59 (69.32) |
| 4-8Mb | £99 (116.32) |

Dealer fitting for the 8Mb upgrade is recommended for the 25MHz A5000.

## A3020/A4000

**Memory**

| | |
|---|---|
| 2-4Mb | £45 (52.87) |

**Hard drives**

| | |
|---|---|
| 170Mb | £63 (74.02) |
| 210Mb | £79 (92.82) |
| 340Mb | £89 (104.57) |

## A400/1

**Memory**

| | |
|---|---|
| Per Mb (up to 4Mb) | £25 (29.37) |
| 4-8Mb | £99 (116.32) |
| RISC OS 3 | £29 (34.07) |
| ARM3 (25MHz) | £69 (81.07) |

**Hard drives.** For prices, refer to the A310 section.

## Various

| | |
|---|---|
| PowerTec SCSI 2 | £155 (182.12) |
| PowerTec Ultra SCSI 3 | £175 (205.62) |
| ARM3 | £69 (81.07) |
| RISC OS 3 | £29 (34.07) |
| MEMC1a | £29 (34.07) |
| MEMC1a (2nd User) | £20 (23.50) |
| Hard disc cradle | £6 (7.05) |
| Fan filters (pack of 5) | £3 (3.52) |
| RISC OS manuals, no vat | £22 |
| Dongle dangle | £6 (7.05) |
| Chip extractor tool (for eg MEMC, ARM2) | £4 (4.70) |
| CDFS upgrade for Oak SCSI card | £25 (29.37) |

**The following item is reduced to clear;**

| | |
|---|---|
| A3000 scanlight (Computer Concepts) | £55 (64.62) |

## A310

**Memory**

| | |
|---|---|
| 4Mb | £55 (64.62) |
| 8Mb | £99 (116.32) |
| RISC OS 3 | £29 (34.07) |
| RISC OS carrier board | £12 (14.10) |
| ARM3 25MHz | £69 (81.07) |
| MEMC1a | £29 (34.07) |

**Hard drives**

| | |
|---|---|
| 2Gb IDE | £105 (123.37) |
| IDE controller | £59 (69.32) |

## 2nd User

Please phone to check availability.

| | |
|---|---|
| A3000 1-2Mb | £9 (10.57) |
| A3000 RAM board (ie bare board, no chips) | £5 (5.87) |
| A5000 2-4Mb | £29 (34.07) |
| ARM3 | £35 (41.12) |

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# The light from the dark



**Paul Thomson** continues his pursuit of perfect 3D worlds

Following on from last month's description of three dimensions, we now consider the processes of light transmission for the purposes of shading our objects. Again, this article will contain an element of maths, but don't worry, without maths we'd be still be painting on cave walls under moonlight.

The ultimate aim of this article is to develop a number of algorithms for shading our 3D objects from last month in such a way that they appear as realistic as possible. For this purpose we need to delve deeper into the maths and physics textbooks to discover the way light interacts with surfaces.

For the simplistic purposes of our graphics models we will assume surfaces are illuminated by the following process:

• Light leaves a (number of) distant light source(s) in a given direction at a given intensity of colour

• Light from each source approaches every surface of our model from a certain angle and increases the intensity of the surface colour by some quantity

Important omissions are reflections, shadows and transparency, but even the tremendous power of the StrongARM cannot support real-time ray-tracing for objects complex enough to feature in a game, so we can justify their omission for now. Another simplification is made by considering the lights as distant sources of illumination. The reasons for this will become apparent later, but essentially it means a single beam of light will approach every surface of the model from the same angle, and we need not recalculate the subtle changes in direction over the object.

The first thing we need to understand is how the properties of the light affect the increase in intensity of the surface. Figure I shows a light shining on a surface from two angles. When the light points directly at the surface, the surface cuts the beam of light at right angles, giving a circular image of light on the surface. If the surface cuts the beam at any other angle, an oval image of light appears on the surface (imagine slicing a tube at an angle and looking at the shape produced).

The important difference is the area the light is spread over, and that the area increases with the angle of incidence. The angle of incidence, by the way, is the angle between the light beam and the normal to the surface – the "normal" to a surface is the direction of a line at right angles to the surface.

If the light source is of intensity X photons per square meter, and the ratio of source area to incident area is 1:2 (the incident area is twice the source area), the intensity incident on the surface is X/2 photons per square meter, since the initial quantity of photons arrive over double the area. That is, the intensity is inversely proportional to the surface area.

With this in mind we can develop an equation relating the angle between the surface normal, the light direction and the light intensity to resulting incident intensity. A two-dimensional diagram of the intersection process is shown in Figure IIa. The beam of light is cut at two angles by the surfaces resulting in two cross-section areas. Brief analysis of this intersection for an arbitrarily angled surface is considered by Figure IIb, and a small dose of GCSE/O level trigonometry, concluding the area of an surface at angle b degrees intersected by a beam of light with area A is:

```
surface area = A / cosine (b)
```

Recalling from a previous paragraph that the intensity is inversely proportional to the surface area, we now have an equation relating surface angles, light

Figure I: Light shining from two angles

Figure 2a: Beam of light intersecting two surfaces with cross sectional area

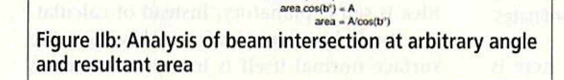


Figure IIb: Analysis of beam intersection at arbitrary angle and resultant area

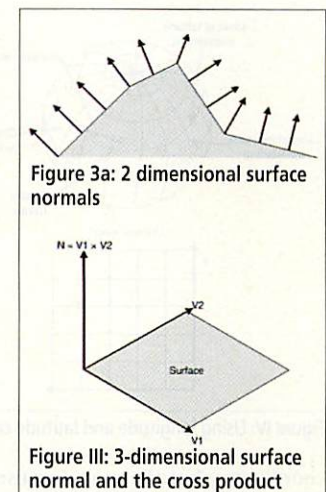


Figure 3a: 2 dimensional surface normals

Figure III: 3-dimensional surface normal and the cross product

angles and light intensities:

```
intensity on surface = light intensity * cosine(angle between surface normal and light)
```

*Progressing* through our maths course we find a *nice equation* for the cosine of the difference between two angles, namely the "dot product", that operates on vectors rather than degrees. This is particularly useful since all our calculations currently use vectors, and trying to visualise differences between angles in three dimensions makes most people's heads spin. The dot product is defined on two three-dimensional vectors V and W as:

```
V . W = Vx*Wx + Vy*Wy + Vz*Wz
```

and:

```
V . W = |V| * |W| * cos(angle between V and W)
```

The |V| notation simply means the length or magnitude of vector V. Manipulating this equation we can derive:

```
(V . W) / (|V| * |W|) = cos(angle between V and W)
```

If we ensure that the magnitude of both vectors is always 1, ie |V| = |W| = 1, then:

```
V . W = cos(angle between V and W)
```

and

```
Vx*Wx + Vy*Wy + Vz*Wz = cos(angle between V and W)
```

...and we have a simple and fast equation to calculate the light intensities for our surfaces:

```
intensity on surface = light intensity * (surface normal . light direction)
```

The BASIC Program 1 on the disc plots randomly sized spheres illuminated by lights from random directions, demonstrating this shading technique. There is now only one problem preventing us implementing a general purpose shader: The calculation of surface normals.

For this purpose we'll need another piece of vector mathematics, the vector cross product, the general idea of which is demonstrated by Figure III. To calculate the direction vector of the surface normal we need two vectors of unit magnitude (length 1) to define the surface direction (obviously pointing in different directions on the surface) and the following formula:

$$V1 \times V2 = \begin{bmatrix} V1x \\ V1y \\ V1z \end{bmatrix} \times \begin{bmatrix} V2x \\ V2y \\ V2z \end{bmatrix} = \begin{bmatrix} V1y*V2z - V1z*V2y \\ V1z*V2x - V1x*V2z \\ V1x*V2y - V1y*V2x \end{bmatrix}$$

When creating our object model we can pre-calculate the normal direction for each surface using this formula and simply rotate the resulting vectors when we transform the object to calculate the surface normal for the object at a particular orientation. Program 2 demonstrates the shading technique applied to the texture mapped object.

## Improvements #1

If you've been following this series since the first article you'll perhaps remember the Gouraud shaded triangles that were demonstrated, but have not been discussed since. Now we have a general purpose shading technique, we can start to improve its application, and the first change to the flat shaded approach is to interpolate the intensities across faces using the Gouraud plotter.

When applying the Gouraud shader we wish to interpolate light intensities across the triangles, and for this purpose we need to know the light intensities for each vertex. This in turn requires us to modify the model data to provide a normal vector for each vertex rather than each face. The normal vector for a vertex can be calculated by taking the average normal direction of the surfaces sharing that vertex (see Figure IIIa). The transformation stage of the Gouraud shaded object renderer is now:

For all vertices of model:

- Rotate 3D vertex coordinates by viewing angles
- Calculate screen coordinates for vertex
- Rotate surface normal direction by viewing angles
- Calculate light intensity for vertex

It is now a simple modification to implement the Gouraud-shaded object renderer as demonstrated by Program 3. This level of lighting complexity is normally sufficient for most computer games, as it offers reasonable appearances for low processing costs. Many games actually make further savings by pre-calculating the light intensities for static game scenery, assuming the light directions will not change while the game runs, and only calculating intensities on the fly for dynamic objects such as game characters.

Where the scenery is very complex, this method can offer substantial gains and only show their disadvantages when dark enclosed scenes (such as those common in *Doom* or *Tomb Raider* for example) require local and dynamic lighting.

This shouldn't stop us experimenting with more advanced techniques though, particularly when effective tricks can actually run faster than the Gouraud shader.

## Improvements #2

Chrome mapping is a fast but fairly crude technique to give surfaces a mirrored or metallic appearance. The rather vague theory justifies itself by claiming highly reflective surfaces will reflect the surrounding environment in some blurred and approximate way. If we could follow the normal direction from the surface to see what it intersects in the environment we could colour the pixel in the corresponding colour. So far, so accurate.

The inaccuracies creep in when we approximate this process by attempting to index into a two dimensional image, the chrome map, by the three-dimensional normal vector. The process of eliminating the extra dimension is something we are familiar with from transforming three-dimensional world vectors into screen ➤



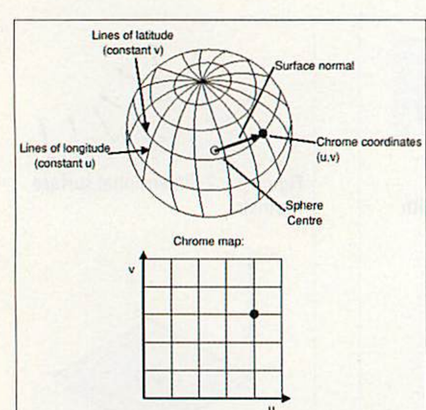




Figure IV: Using longitude and latitude coordinates

coordinates, but the mapping used here is more complex as it must allow for all possible directions, including those pointing away from the viewer.

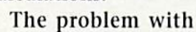
Consider the two-dimensional system of longitude and latitude used to reference locations on a sphere. Since our normal vector will always be of unit magnitude, as defined previously, we can visualise it as tracing the surface of a sphere, and therefore describe all possible positions by their longitude and latitude coordinates. See Figure IV for details.

A further approximation is made in the way the long-lat coordinates are used by the renderer. Instead of calculating the surface normal for every pixel of the object we use a similar trick to the Gouraud shader, in that the values are calculated for each vertex and then linearly interpolated across the triangle.

It transpires that this is an identical function to the standard texture mapper just with different map coordinates, and since we need not perform any shading calculations, this system can execute faster than the Gouraud textured routine. For most purposes the errors are difficult to spot, and as Program 4 demonstrates, it is a fast and effective extension to the renderer. Figure V shows the chrome map image used.

The next trick is fairly uniformly misrepresented by the name Phong shading. Named after Bui Phong, this shading technique is more accurately described as normal-vector interpolation shading and is one of the more advanced techniques a real time graphics engine can hope to use. The idea is self-explanatory; instead of calculating the light intensities for each vertex, the surface normal itself is interpolated across the polygon and the lighting function applied at each step.

This has a very specific improvement, namely that if the normal direction of greatest light intensity does not occur at one of the vertices, Gouraud interpolation will miss it, since the maximum intensity value cannot exceed any of the vertex values. Phong shading will correctly render the highlight, but at the expense of some seemingly horrific calculations.



The problem with Phong type shading lies in the necessity of unit length normal vectors and the intrinsic complications this introduces into the interpolation method (see Figure VI). Many mathematical approximations have been developed to avoid the essential square root to keep the normal vector a constant length, but a simpler, albeit cruder, approximation can be derived from the chrome mapping technique.

By viewing the illumination source as an element of the environment the chrome mapping technique can be used to quickly read light intensity levels. Program 5 demonstrates the technique; notice the improved quality of the lighting, the way the highlight moves over the object and the apparent surface glossiness this method can yield. The intensity spectrum of the light source can be pre-processed into the illumination map so surface properties such as dullness and reflectivity can be modelled to a reasonable degree of realism.



Figure V: The chrome map used by Programs 4 and 6

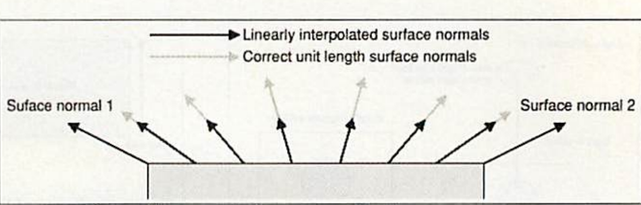



Figure VI: The problems with Phong type shading

## Improvements #3

Bump-mapping is a technique to simulate surface irregularities such as pitting or ridges without actually modelling them by the polygon mesh of the object. The bump-map operates in a similar way to the texture map in that it contains surface details that are wrapped around the object and used to modify the properties for specific regions. Instead of modifying the surface colour, bump-maps modify the surface normal direction to convincingly model small ridges or pits.

The bump-map itself generally consists of a set of vectors by which to transform the surface normal for a particular point; Figure VII shows a typical setup. Generally bump-mapping is not a technique used in games, but by applying it in a similar way to the chrome and Phong cheats by modifying the chrome map coordinates using the bump-map data, we can produce a fast and effective method to improve the appearance of our objects. Program 6 demonstrates the use of bump-mapping on a more suitable torus object; notice the way ridges reflect the highlight and cast shadows. AU

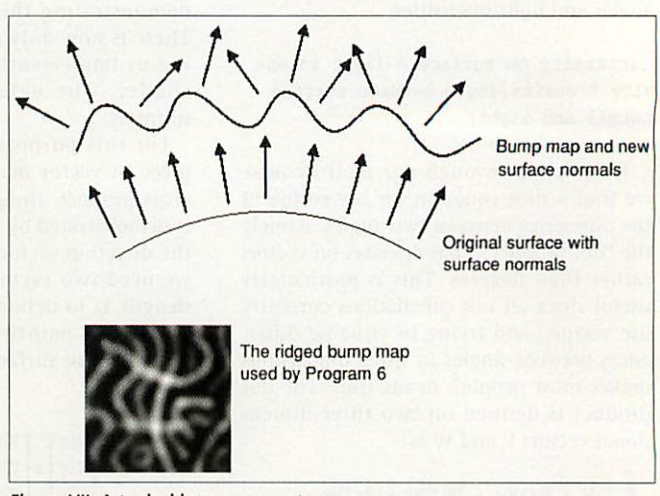



Figure VII: A typical bump-map setup

## Next month

**In the next article some of these lighting techniques will be used to render the landscape that will form the beginnings of the game itself.**



# BBC Education and NCET launch Multimedia Awards

BBC Education and the National Council For Educational Technology (NCET) have teamed up to launch the fourth National Educational Multimedia Awards (NEMA).

NEMA '98 aims to encourage pupils and students to create multimedia compositions. BBC Education and NCET are looking for multimedia presentations developed as part of curriculum delivery. Awards will be made for original and creative multimedia compositions from pupils and students of all abilities attending primary and secondary schools, sixth-forms and further education colleges in the UK.

Entries should be focused on the curriculum and linked to programmes currently broadcast by the BBC. Entries should be for Acorn, Macintosh and PC platforms only and prizes will include multimedia hardware and software donated by a wide range of companies in the multimedia field.

A full entry pack, including a CD-ROM containing clips of award-winning entries from previous NEMA competitions, can be obtained by phoning 01203-416994.

The closing date for NEMA '98 is April 30 1998.

## What do you need?

The short answer is probably not very much more than you already have. Most schools should have access to some sort of multimedia authoring program. For the Acorn platform, the most popular authoring tool for professional use is probably a close run battle between *Hyperstudio* by TAG, *Key Author* by Anglia and *Genesis* by Oak Solutions. Also available for Acorn is *Magpie* by Logotron and *Ultima* by SEMERC. Last year's Acorn-based entries were mainly created using one of these. Entries should be on floppy disc(s) unless really large, in which case they should be on CD.

There are programs which are not often thought of as multimedia presentations such as *Clicker*, but if you submit a project using this, you might need to provide the program to run it.

Another possibility is to use a Web authoring tool to create your presentation in HTML, upload it to your website and then your submission need only be the URL of your website.




*HyperStudio* is a very popular authoring program used by numerous people, including *Acorn User* for two cover CD-ROMs

## What else?

Multimedia means that the presentation should contain more than just plain text. There should be a good balance of relevant pictures (both drawings and photos), some sound and possibly some moving images, either video or animated drawings.

In broad terms, capturing pictures can be done in two ways. First, scanning a photograph or document. Scanners are very cheap at present with some colour flatbed scanners costing as little as £150, including the interface card (usually SCSI). The resulting image will probably be an Acorn sprite which can be dropped into a suitable frame on the authoring program.

The trick is to get the picture square on the scanner and to then do as little editing as possible after scanning. Unless you have a really good photo re-touching program, it's worth spending some time getting the colours, shades, shadows and tones correct at the outset rather than trying to edit the sprite after scanning. The only exception might be cropping the sprite to fit into a specific place on the page.

The second method is to digitise a picture from a video source. That source could be a video tape, a camcorder, a still digital camera or even from live television. Of them all, a still digital camera is probably best because the shot is still. Freezing a tape to capture a still picture is never very satisfactory unless you have a really expensive VCR or camcorder with rock steady pause. Trying to capture a still image from live TV is also a little hit-and-miss.

If you do have a video camera then you can produce small movie clips which can be displayed in your multimedia presentation. These will need to be captured in the computer via a suitable interface card (Irlam and Wild Vision both produce suitable video digitising cards for most Acorn computers) and this will output your film in either Acorn Replay or MPEG format depending on the specification of the card.

Small animations can also be included and the most likely format for these will be ACE film format. Of them all, the simplest animation creator is without doubt *Snap Happy* from Dial Solutions which simply takes a series of 'snaps' of a given area of the screen.

Sound is easily captured using a parallel port sound recorder system similar to the one supplied by SEMERC. These are very cheap and easy to operate.

Although these products do not produce professional quality sound samples, the resulting sound is quite clear and certainly up to the quality of most Acorn speakers.

So there it is. You have about two months to produce a multimedia masterpiece. Best of luck.

In case you thought that you can't make a professional multimedia presentation with a generic authoring tool, take a look at Anglia's CD-ROMs which are almost all created with their Key Author

### Contacting me

You can contact the Education page by writing to me, Geoff Preston at *Acorn User*, IDG Media, Media House, Adlington Park, Macclesfield SK10 4NP or by e-mail to: aueduc@idg.co.uk

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# Kozzey's coffee shop

**Kaustav Bhattacharya** explores the free Java compiler

Over the last year you'll have heard the name Java touted far and wide across the Internet, in the newspapers and computer press. It has slowly but surely developed into a commercially viable and generally accepted serious programming language for increasingly large scale computer programs. Heavyweight developers such as Lotus, Sun, Microsoft and other industry leaders are porting some of their well-known tools and applications over to Java.

This relatively new language is opening up new markets and opportunities for big corporations and small one or two person operations alike. The attraction of Java has been its portability. The paradigm that it can be written once and run on any computer operating system without re-writing is at the heart the Java programming language. This is evangelised by Sun Microsystems – the creators of Java – through its 100% Pure Java scheme, widely supported by the majority of developers around the world apart from, of course, Microsoft.

Late in 1997, Acorn released what is known as a Java Virtual Machine (JVM) for the RISC OS platform, then only available to Clan Acorn members. Java is both a compiled and interpreted language. Java source code is turned into binary instructions just like normal microprocessor machine code. However, unlike C or C++, where the source code is reduced to native instructions for a specific type of processor, Java source code is compiled into a universally accepted format, instructions, which are suitable for the JVM to run.

Compiled Java byte-code is executed by a Java run-time interpreter, which performs all the normal activities of a real processor, but it does so in a secure, virtual environment. The crux of all this is that the run-time interpreter does this in accordance to strict and well-defined open specifications that can be implemented by anyone who wants to produce a Java-compliant virtual machine.

The Java interpreter is relatively small in size and can be deployed in a desired form for a particular platform. On most systems the interpreter is written in a fast, natively compiled language and run either as a separate application or embedded in another piece of software such as a Web browser. All this basically boils down to one thing: Java code is implicitly portable.

The JVM is coupled together with the Java Development Kit (JDK) which provides the language itself plus packages or library routines that let you write Java applets and applications. The JVM and JDK are only one part of the equation. With Acorn's current release of Java, you can quite satisfactorily run Java applets in your Web browser. Java 1.0 is officially obsolete now, though it will be some time before vendors catch up with the new release.

Various beta test versions of the JDK ranging up to version 1.2 (alpha release at the time of writing) exist and it is thought that the next official release of Java will be Java 1.2. The industry has largely started to write its Java applications in the current standard which is 1.1. Acorn's JVM will currently only run Java 1.0.2 compliant code which means if you try to run an applet in your Web browser which only results in a blank screen, it may be that you've tried to view a Java applet written in Java 1.1 or higher.

So far we've talked about running pre-written Java applets on your Acorn. However, when it comes to compiling Java code within the RISC OS environ- ➤

ment, many will hit a dead end as until recently there was no way of compiling Java code natively on your Acorn. This lack of a suitable Java compiler for the Acorn platform has recently been addressed by Peter Naulls, hailing from New Zealand.

His recent port of a UNIX-based Java compiler has opened up the opportunity for Acorn programmers to develop Java code natively within RISC OS. The compiler is known as *Guavac* – a rather fine tasting fruit it is too – written by Effective Edge Technologies and distributed under the Gnu Public License (a subject to be covered in a forthcoming *Acorn User*).



# Kozzey's coffee shop

*Guavac*, within the RISC OS environment, behaves not too dissimilarly to *Javac*, the original command line driven Java compiler available freely from Sun for PCs, Unix and a few other platforms. After downloading *Guavac* and copying it out of the zip archive and onto your hard disc, it is a simple matter of opening a task window and issuing appropriate commands to the compiler.

As *Guavac* is linked with a set of library routines known as *UnixLib*, it cannot automatically increase its Wimpslot (the amount of memory allocated to the *Guavac* compiler), so the Wimpslot must be set first by opening the Task Manager window and sliding the Next bar up to around 2.6Mb. If you're short on memory you can run an application called *Virtualise* by Clares Microsystems which effectively provides a form of virtual memory within RISC OS. Plans are under way to allow future versions of *Guavac* to use less memory.

Using *Guavac* is simple. Call your source file something like hello/java, double-click on *Guavac* to set the run path and ensure your Java source file is in the current working directory. Then issue a command in the Task window you have opened and type:

```
Guavac hello/java
```

If there are no errors within your code, the program will compile and produce a class file. You can then invoke your applet through an HTML file, which could look something similar to this:

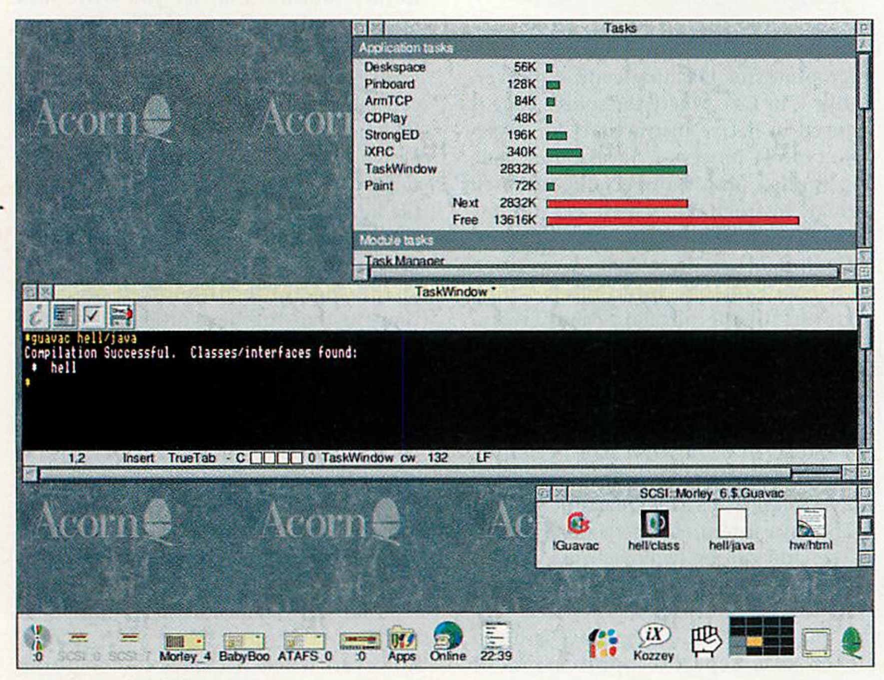
```
<html>
<head>
<title>Hello World!</title>
</head>
<body>
<applet code=hello.class width=300
height=200></applet>
</body>
</html>
```

The RISC OS Filecore possesses a couple of problems when using *Guavac*, the most notable being the 10 character filename limit. As a result, by default *Guavac* doesn't add the .class extension to the generated class files due to the likely hood of it being truncated to 10 characters by RISC OS. However, a parameter can be used to add the .class extension to the file name if desired.

Most of you will also be aware that full-stops are not allowed in RISC OS file names, thus we simulate a file extension by using a backslash of the form hello/java or hello/class. Most FTP programs running under RISC OS will map the / to a . when transferring files up to your Web server.

While writing this review, I have been testing *Guavac* on a 233MHz StrongARM based Risc PC with 26Mb of RAM and a 3.1Gb hard disc. Although you can run Guavac happily on lower spec machines with a processor such as an ARM610 or ARM710, the speed of compilation will suffer. On my machine a moderate sized source file, at around 87Kb, took approximately 48 seconds to compile. This timing is by no means an accurate measure of the compiler's speed as every person's code will differ in what libraries it pulls in and coupled with a variety of other factors it will lead to different compilation times.

*Guavac* has no visual front-end at present. It is entirely command line driven, although errors in your code can be viewed via a text editor such as *StrongEd* or *Zap* or any other text editor, which supports the throwback protocol. You'll also need to have the DDEUtils module loaded for this to work. To help first time users of the RISC OS port of *Guavac*, a



Compiling a simple Java applet

# Guavac FAQ

*Q. Who's responsible for errors and omissions in this FAQ?*

A. I (Peter Naulls) take full responsibility, and no blame should be placed on employees of Acorn or Sun Microsystems. Corrections and additions are of course gratefully received.

*Q. Where can I get the latest version of Guavac from?*

A. The RISC OS Guavac homepage is: http://chocky.home.ml.org/java/Guavac/

*Q. Guavac says my source file is not a plain file or invalid source file, what's wrong?*

A. Guavac can't find your file, or you've used an illegal format for the filename. If you don't specify a full RISC OS path, Guavac will look in the CSD. Java source files as understood by Guavac must be either file/java or java.file, where 'java.' in the second example is a directory. For the first format, you can give either of:

```
Guavac file.java
```

or

```
Guavac file/java
```

In the second, you must have

```
guavc java.file
```

for it to be found.

*Q. I've compiled my program, but !Java says it can't find my class, what's going wrong?*

A. Acorn's Java is very picky about what it will do with Java classes. It will complain when:

(a) The file *!Java.ClassesZip* is an image file (change the filetype to a textfile);

(b) The Java class does not have a "/class" extension (or as much as will fit into a RISC OS filename). This means you will want to use the Guavac -ext flag.

(c) The class you compiled was declared as public. When you do this, the filename must be the same as the class's name. If you rename it for whatever reason, *!Java* will complain.

*Q. What is the format of the **Java$ClassPath** variable, and when do I need to set it?*

A. Firstly, you won't need to set this unless you are doing something unusual (this also applies to the -classpath flag). If you do need to set it, then the format is simply the full RISC OS path, although you can use a UNIX-type path if you need to. Note that *!Java* sets this variable to point to *!Java.ClassesZip*, and Guavac will use this.

*Q. Why will javac compile some things, but not Guavac?*

A. There are some things that Guavac does not handle well (have a look at *!Guavac.doc.TODO*) The best example is circular dependencies between classes. A fix for this problem is to first compile a "minimal" version of one of the two circular classes, then compile the second and finally the full version of the first class.

*Q. Why will Guavac compile some things, but not javac?*

A. You're probably trying to compile Java 1.1 things like inner classes, which are not supported in Java 1.0.2.

*Q. Why doesn't Guavac do <<insert RISC OS bug/feature>>?*

A. Maybe it's a bug in either the port or the program itself. Please contact me with details, and if possible, the smallest amount of Java source that reproduces the problem. It may also be helpful to know details of machine and OS. If it looks like a "proper" Guavac bug rather than a RISC OS related one, try asking on the Guavac mailing list.

*Q. What's a good book to learn Java from?*

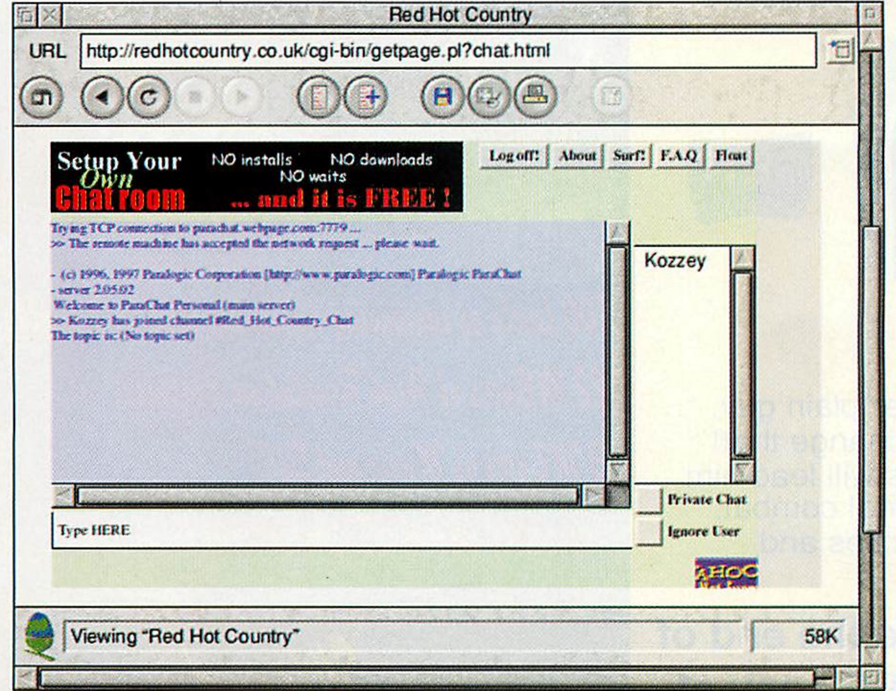
A. Try to get one that supports Java 1.1. Some good books are: "Java in a Nutshell" and "Special Edition Using Java".

*Q. Where can I find more RISC OS related Java programming information?*

A. The Acorn newsgroups. In particular, comp.sys.acorn.programmer.

FAQ has been written to help you along with any initial problems using the compiler. As well as being present in this feature, the FAQ should also be available on the RISC OS *Guavac* website, which should be live on the Web by the time you read this.

During the time I have been using the compiler, it reliably compiled Java programs ranging from extremely simple 10 line programs such as the ubiquitous hello world program to modestly complex Java applets in the order of 100-200Kb in size.




Using Java with the Acorn Browser

To put *Guavac* through its paces, check out the online Java Boutique (http://www.javaboutique.com/), Gamelan (http://www.developer.com/directories/pages/dir.java.html) or The Java Centre (http://www.java.co.uk/) where you can download free java source files which you can compile using *Guavac* and run using Acorn's *!Java* program within your Web browser.

*Guavac* is free, it's capable and at last opens an opportunity for Acorn programmers to develop Java code natively. It's a start, and now that the ball has started to roll, it will be interesting to compare *Guavac* to Acorn's own RISCafé Java development environment when it gets released in its full form and any other forerunners to enter the Acorn Java compiler market. AU

## Product details

Product: Guavac
Programmer: Peter Naulls
Download: http://chocky.home.ml.org/java/Guavac/

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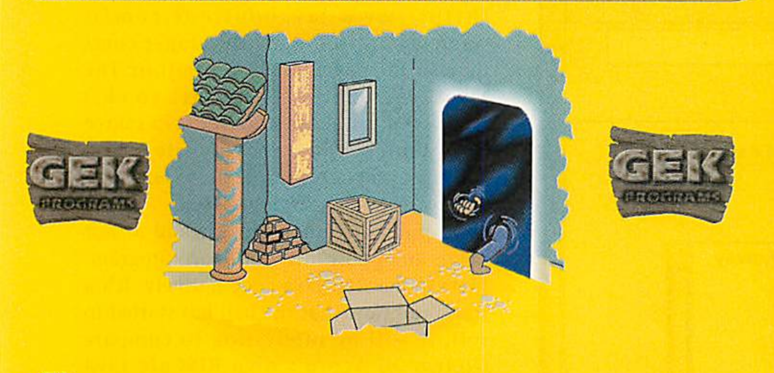
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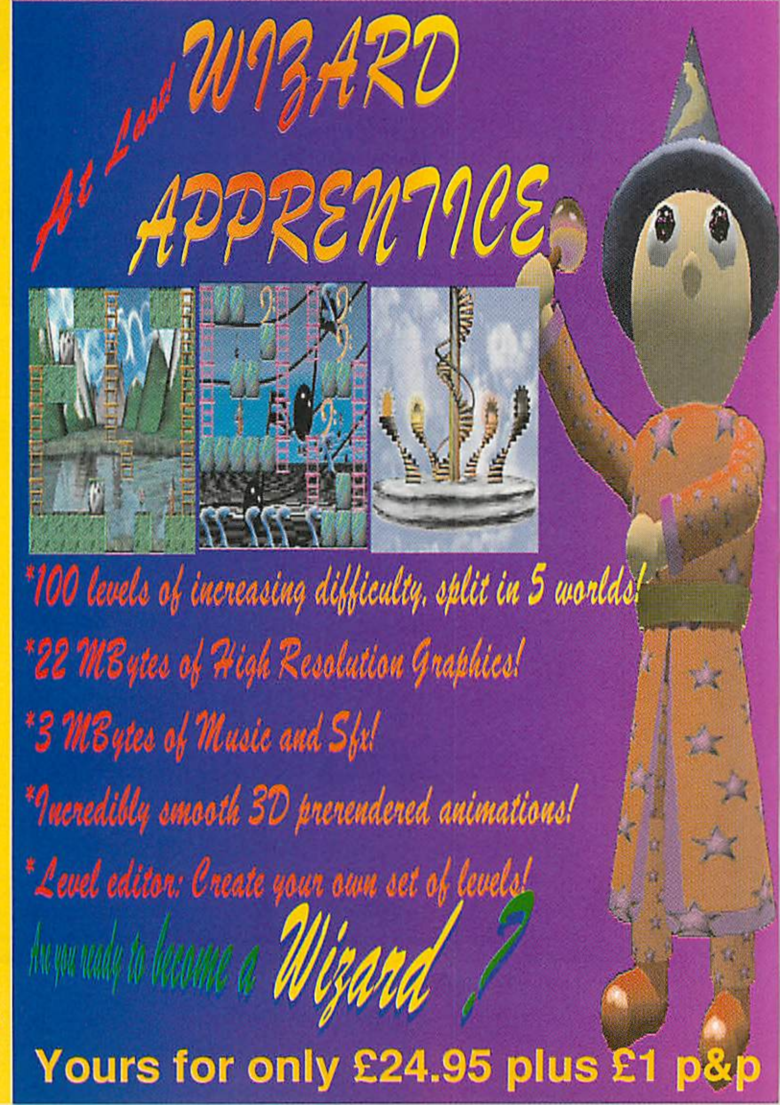


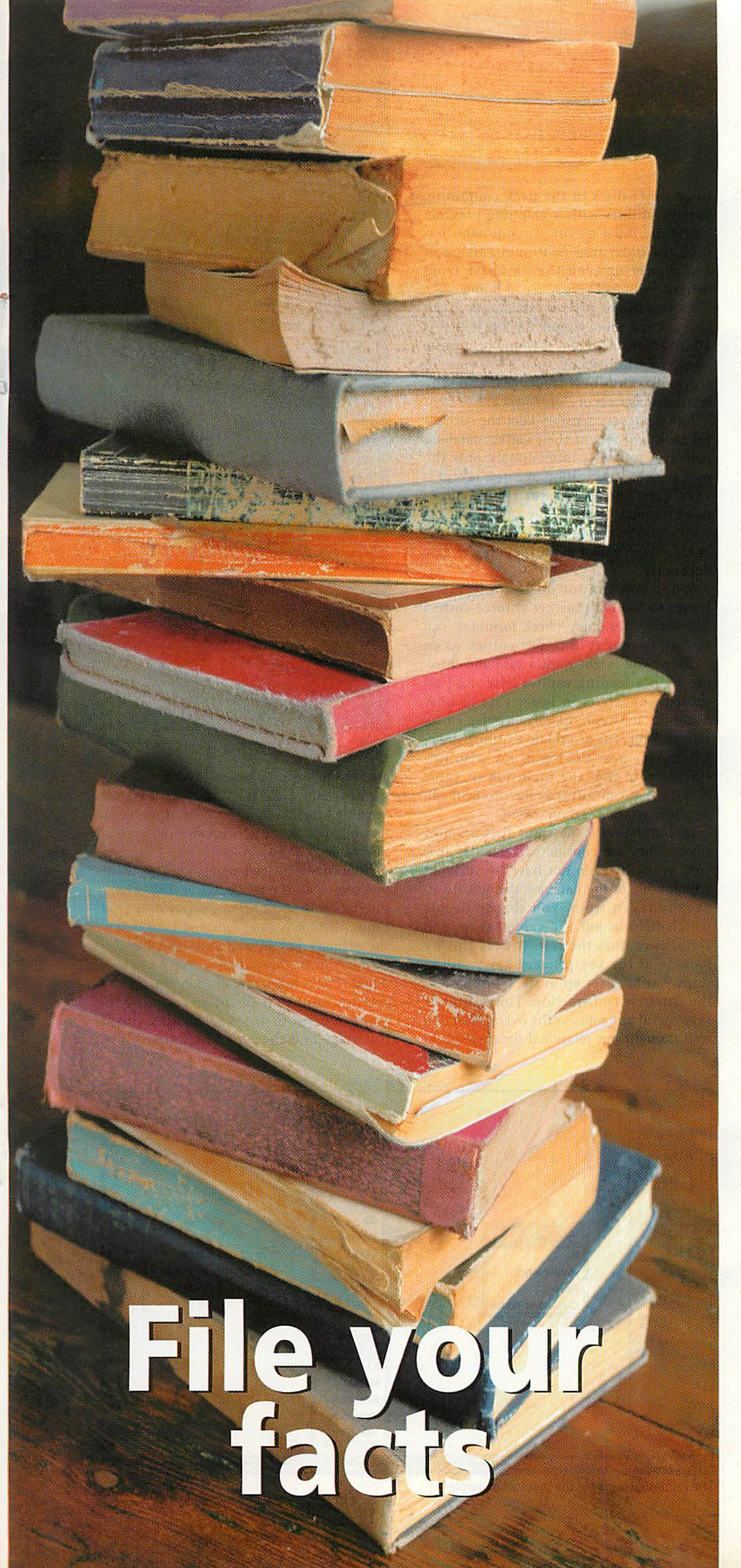

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# File your facts

**Mike Tomkinson** looks at the advantages of a relational database using the new version of DataPower

Let's face it – the arrival of any new, non-trivial software package for the Acorn is big news. It may not be good news, that depends on the software, but it is certainly big news. This is particularly the case when it is the arrival, after a very long wait, of something as important as a relational database program.

I am talking about the long-awaited *DataPower 2* from Iota. I will not go into the politics of why it has taken so long but Xemplar have not, in my opinion, done Acorn users any favours by going for cross-platform compatibility via the original and non-relational *DataPower* rather than pushing for the greater need for a new relational database.

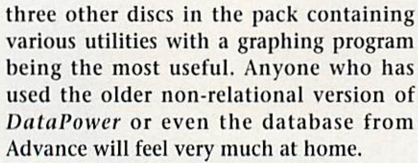
It may be more pragmatic to recognise that many once Acorn-only schools now have to offer a sensible 'mixed economy' of Arcs, Macs and PCs – but at what cost? I personally know of many IT co-ordinators in previously Acorn-only schools and colleges who have had to abandon ship and move to PCs simply because there wasn't a reasonable selection of relational databases for the Arc.

This is particularly the case where schools and colleges have sensibly offered Information Technology at A/AS/GNVQ level in which a relational database-based project has become an almost de facto standard. It may not be a popular opinion at either Xemplar or Iota, but the fact remains that we have had to wait a full 12 months for a relational version while cross-platform versions of the original were developed.

Enough of the complaints. The two most important questions are: Was it worth the wait is and how does it measure up to the competition? In order to answer these questions I am looking at *DataPower 2* in this issue and next month I'll be reviewing *Impact Professional* from Circle Software and then offering a comparison.

## Why relate?

Firstly I'll return to the point blithely skipped over in the first paragraph – what is a relational database and why is it important? Most database users will be quite comfortable with the concept of a normal flat file database. The situation is analogous to a card index box. The collection of cards is a file, each card is a record and upon each card there are fields. A collection of cards might store names, addresses and telephone numbers and the ➤



cards would be stored in alphabetical order.

The problem with such a database for some operations is its inherent inflexibility. For example, many of you may be able to remember public libraries before the advent of computers. They probably used the Browne system. To borrow your six books you had six little card pouch tickets called reader's tickets, each with your name and address on them. Into these went a card from the individual books you wanted to borrow, and these were stored in date and alphabetical order in an issue tray.

A reasonably efficient system in its own way, but think about it – your name and address is stored six times, the system cannot tell you who has a particular title out on loan, you cannot produce any statistics and you must store in date order otherwise you cannot tell who has overdue books. The system has much redundant data and if the reader moves house or changes their name the reader cards must be updated six times.

A relational database would have three separate tables – Members, Books and Loans. The Loans Table would acquire the information from the Members table using a primary key, for example a membership number. It would do the same from the Book table using another primary key, for example the acquisition number and bring the information into the Loans table.

The new DataPower 2 layout menu bar – not much has changed here

The name and address of the member is no longer stored six times on the database but once and referred to by the Loans table. A more modern analogy is the video shop where a relational database stores the loans separately from the members and film details, except for the primary keys.

The theory and practice of relational databases is considerably more complex than I have outlined, but any good A level Computing/IT textbook should cover it.

## DataPower 2

The program is installed to a hard disc from a single floppy which contains one credit on the single user version. There are three other discs in the pack containing various utilities with a graphing program being the most useful. Anyone who has used the older non-relational version of *DataPower* or even the database from Advance will feel very much at home.

As you might expect, *DataPower 2* can also act as a more simple flat file if that is all that is required, but it would be a waste of the new features. As such I will concentrate on the new features and the relational aspects of *DataPower 2*.

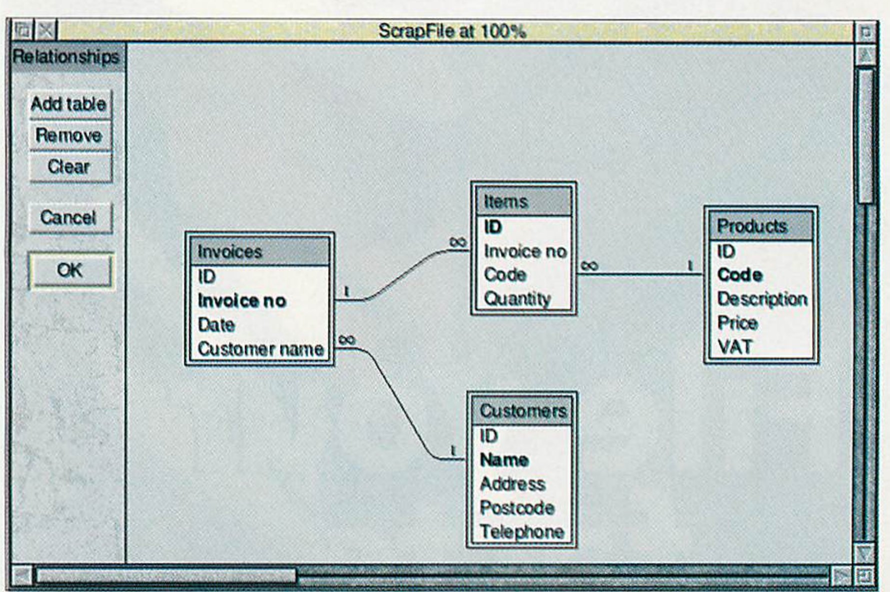
Iota have very sensibly kept the successful look and feel of their earlier database packages and this immediately puts the user at ease. The creation of a new layout is very easy and the major field types – numeric, text, date etc. are catered for. As with *DataPower* you can set up value lists at this stage which act as pop-ups to ease data entry.

What you cannot do is apply input masks to fields to further enforce correct data entry, although 'check formulae' can be used to restrict in correct entries. As an example you might want a surname entering with a leading capital letter and all subsequent letters in lower case or only numbers between specific values to an integer field. This would be a feature somewhere very near the top of my wish list. Having said that the inclusion of value lists for fields means that the problem can be alleviated to a certain extent.

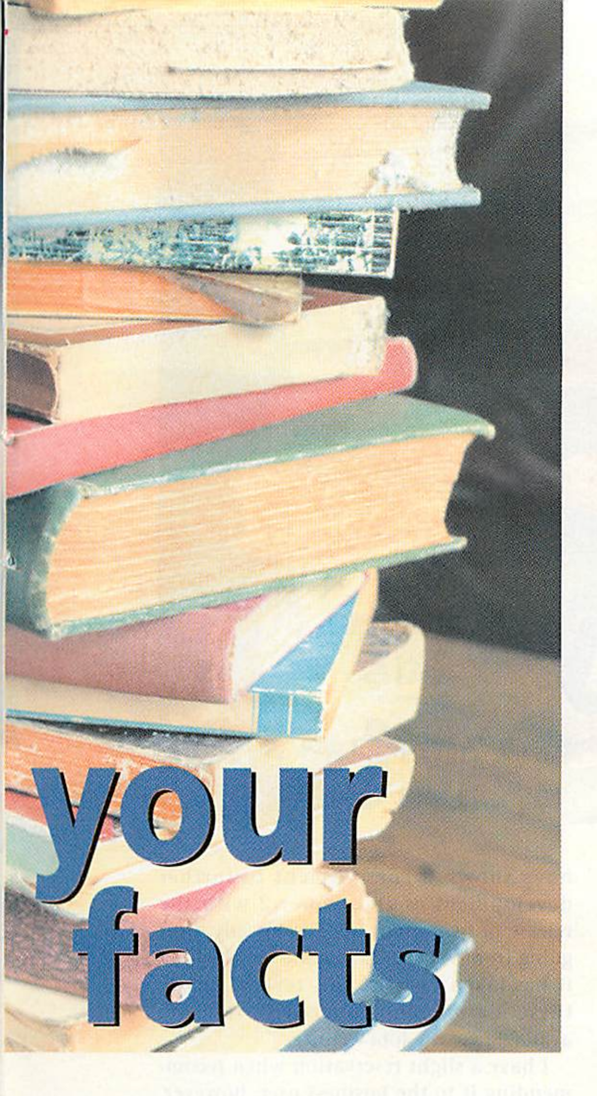
In *DataPower 2* the value lists are now smart. They are considered smart because you, as the user, do not have to work out which table of the database the actual values are taken from. You simply decide which field to put the value list on and *DataPower* does the rest. It does this by looking at the key/primary key relationships you have set up in the join phase of the database construction. This feature is very useful and adds to the overall feel of a well thought out relational database package. Having created a new layout, and presumably added the relevant data, it is now possible to add a new table. Another blank layout appears and you can create your new table.




Now comes the clever part – at this point you can create a relational link. This is simplicity itself as *DataPower* uses drag and drop. All that is then required is to define the primary key in one table and the foreign key in the second table. Well, a pair of double clicks takes care of that. The type of relationship, that is one-to-one, one-to-many or many-to-one is again dealt with at this stage and the type of relationship is




The relational joins for the Invoices example




shown on the screenshot of the relational links for the Invoices example below.

In practice, as in the Invoices example, there would normally be more than two tables, but the method of creating the relations is the same. The apparent simplicity of relational database creation is the greatest strength of the program, but do not be fooled into thinking that no thought or planning is required. In an educational context the analysis and design part of the process should be properly taught from first principles. This should include a careful consideration of the contents of each table so as to reduce data duplication. This process is called normalisation. A badly designed relational database is probably as much use as no database at all.

Some of the new features have already been mentioned but others include the ability to force integrity constraints so that a linking field, usually but not always a primary field, must *always* refer to a valid record in a related table. You might not want to enforce integrity if you wished to create, for example, a new invoice for an already existing customer, but you would wish to enforce it for a booking for a holiday for a customer.

As pointed out above, one of the main advantages of a relational database is the efficiency of data storage. A correctly normalised relational database will not be storing the same information many times in different tables, but sometimes and especially with primary keys this is unavoidable. *DataPower 2* handles this fact well by providing the ability to change a record and have this change cascade through the entire database. Obviously this is a feature to use carefully especially with deletions until you are confident of the likely results.

The power of any database, relational or otherwise, lies not just in the ease with which you can construct it, but also with the ease of eventual use. For most databases this involves searching, sorting, the production of reports and, in particular, graphs.

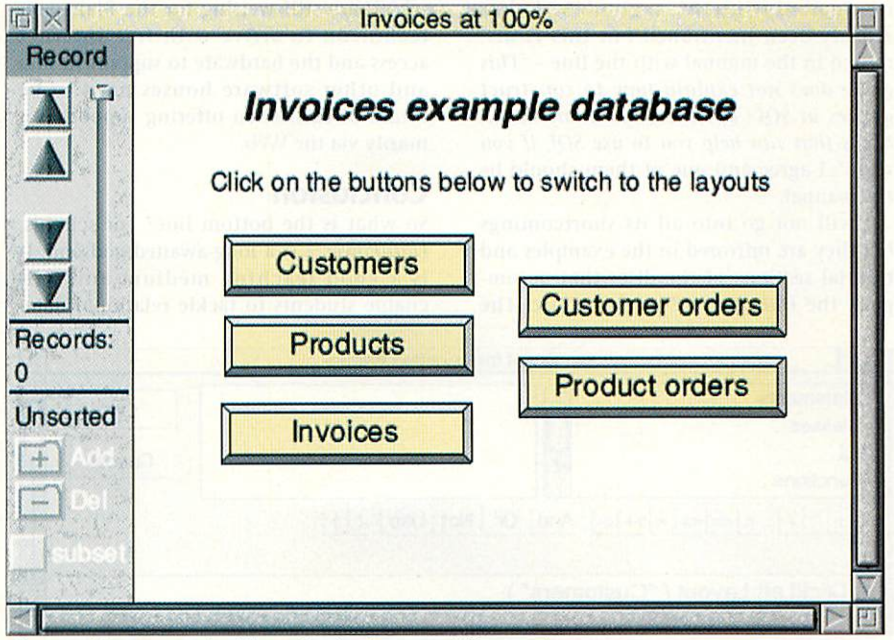
A search or sort is usually produced by some form of query. On a flat file database a query will normally be a simple sort with perhaps the ability to combine search parameters with logical AND, OR, NOT etc. This is normally perfectly adequate for a simple database. Of course you may only require a simple search of a more complex database and the same system can be applied. But what about when a more complex query is required from a more complex database? The same system is unlikely to prove adequate for the task.

The method of producing the result of a more complex query cannot however be complex itself. The reason is that the eventual user of the database may not be you. You may be developing a system for another user who may be without the benefit of your vast experience. This point is too often lost on those who develop systems and especially database systems. Fortunately this point was considered long ago and the solution is Structured Query Language or SQL. This industry standard language exists to facilitate relatively easy searching of databases, particularly for those without the benefit of programming skills. Iota have implemented SQL as a feature of *DataPower 2*.

This is the first SQL implementation for an Acorn-based database after Squirrel. SQL at a basic level is based on the select statement which is followed by from and where. This provides a powerful method of constructing queries. In *DataPower 2* these can be edited and saved for use elsewhere. As a teaching tool this almost justifies *DataPower 2* in itself. It certainly offsets my earlier criticism of the lack of input masks for fields.

Alongside the implementation of SQL, Iota have added a scripting language. It is probably easiest to think of this as akin to a macro language for a spreadsheet. Essentially a macro is a set of instructions which are programmed, and upon compilation and running, simplify a task for the end user. A good example is the creation of navigation buttons on a database to automatically take a user from one area to another. It can perform much more complex tasks, but this will ultimately depend on the skill of the database programmer.

This shot from the Invoice example database opening screen shows buttons programmed using the scripting language.




The use of buttons to simplify navigation between different views

The buttons can also be created to execute formula fields like the calculation of VAT on certain products but not on other non-VAT items. The inclusion of formula fields is not a new feature, it was there in *DataPower 1*, but it is now easier to write and edit them via a formula editor window. This is a new feature and makes the handling of formulae much easier than before.

At this point all this talk of programming may lead you to believe that *DataPower 2* is complex. We use application programs rather like our brains – using only a small part of them most of the time. This is fine, but I always find it reassuring ➤

➤ that a program is not going to be lacking when I want to perform something that is more demanding. *DataPower 2* is like this; simple most of the time but capable of performing quite complex tasks when really required.

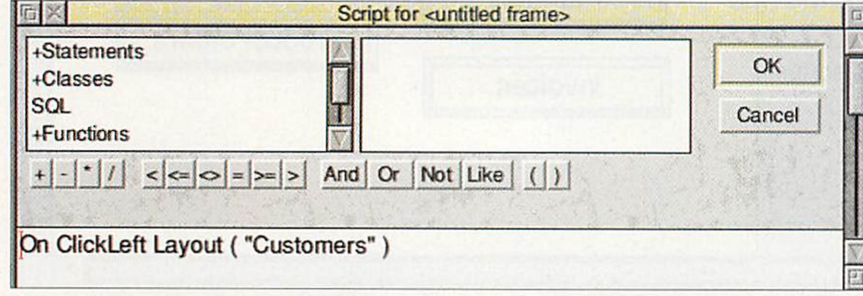
## The bad news

So far it all sounds like good news – a capable program and one which is remarkably stable. I only managed to crash it twice and only then when I deliberately set out to do just that. There must be some bad news. There is, and unfortunately for a program as complex as *DataPower 2,* it is the manual.

Iota have had to reach a compromise between releasing a stable version of the software after a long wait and having a good manual. Something had to give, and in this case it is the manual, which shows every sign of being rushed. This is something they are aware of and a better version will be forthcoming. With Acorn software the manual has to be good as there will not be a *DataPower 2 for Dummies* book along in the near future.

It is a shame as it really lets the program and in particular some parts of the program down badly. As an example, the implementation of a good SQL has already been mentioned but this is dismissed in the manual with the line – *'This guide does not explain how to construct queries in SQL, but there are many useful books that can help you to use SQL if you wish.'.* I agree and one of them should be the manual.

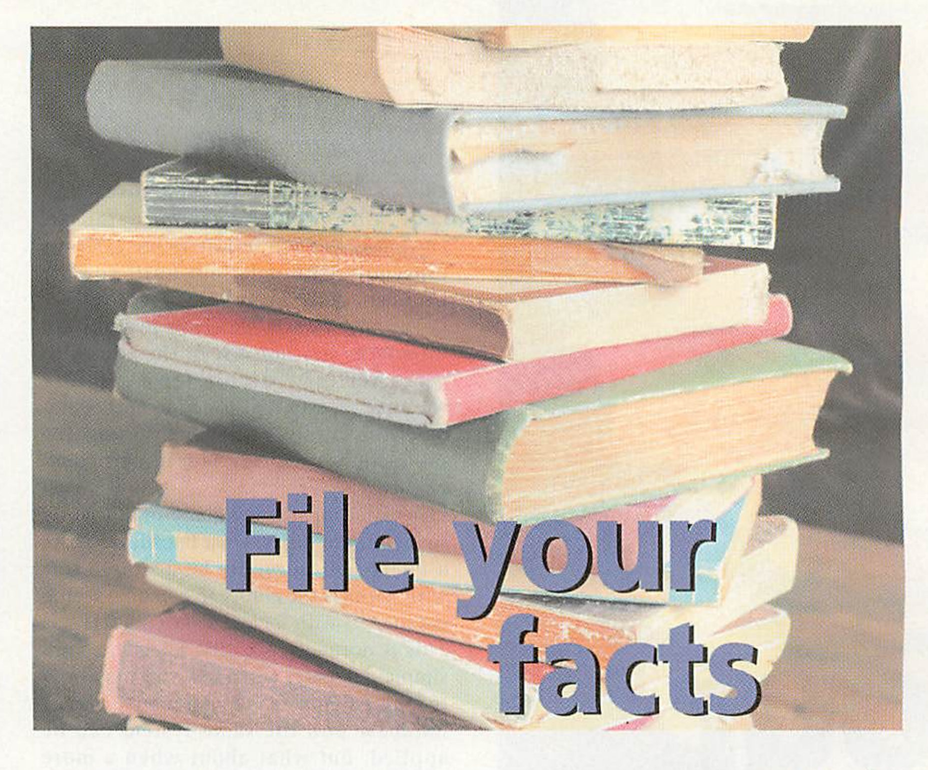
I will not go into all its shortcomings but they are mirrored in the examples and tutorial sections of the discs that accompany the *DataPower 2* program disc. The examples are not relational and while the tutorial takes you as far as a relational database, it could be better.




The scripting language for the customer button

As I have said, Iota are aware of the problem and have gone a long way to provide users with better support via the Internet. A visit to their website at www.iota.co.uk will provide an excellent tutorial based on an invoice for a lighting company, as well as the files required to construct it. This needs to be included in the package as quickly as possible as it is a very good example and explains much of what is missing in the manual.

There is also a SQL database on the website which goes some way to providing an explanation of how SQL is dealt with by *DataPower 2.* One hopes that other example database will also appear here before long. Access to the Web is now very widespread, but despite the hype it is by no means universal, especially in schools which are still waiting for the Blair pantechnicon to arrive with free Internet access and the hardware to support it. Iota and other software houses need to be aware of this when offering support primarily via the Web.




## Conclusion

So what is the bottom line? For schools, *DataPower 2* is a long-awaited godsend. It is a good teaching medium and will enable students to tackle relational databases at A/GNVQ level or even earlier if required. As such, I have no reservation about recommending it to schools/colleges especially to those already using *Advance* and/or *DataPower 1.*

The upgrade from a *DataPower 1* site licence depends on the size of the site but for a large site it is a very reasonable £299 plus VAT. For other prices contact Iota as the structure is complicated by definitions of large and small sites, upgrades and multi-platform considerations.

As mentioned, I have only dealt with new features, so client server operations which were implemented in *DataPower 1* are also to be found in *DataPower 2.* Iota have shown a commitment to further development of *DataPower 2* with the release of two minor updates already, thus going from version 2.00 to 2.04 in the time it has taken to write this review. Again, these maintenance upgrades are made available via the Iota website.

I have a slight reservation when recommending it to the business user, however, as many business users wish to work on an Arc at home and at work. This usually involves two machines, simply because there in no Acorn portable or any prospect of one in the near future. The credit system of installation of a single user copy would mean either installation to a floppy (not very practical), or the de-install/re-install to another machine if you wished to use it in two places albeit at different times. Iota do provide the option to use their 'Second Credit' scheme for users with two machines in cases like the above, however this costs an extra £15 (handling fee).

For some users the cross platform compatibility with PCs and Macs will be a major factor, particularly in mixed economy situations. Whether *DataPower 2* will break the stranglehold of *Access* from Microsoft is another issue – I rather doubt it, but it probably deserves to. It just might be enough to stop some schools deciding to abandon Acorn and going for the lowest common denominator of PCs.

### Product details

| | |
|---|---|
| Product: | DataPower 2 |
| Price: | Contact Iota direct |
| Company: | Iota Software Ltd |
| Address: | Iota House, Wellington Court, Cambridge, CB1 1HZ |
| Tel: | 01223 566789 |
| Fax: | 01223 566788 |
| E-mail: | sales@iota.co.uk |
| WWW: | http://www.iota.co.uk |

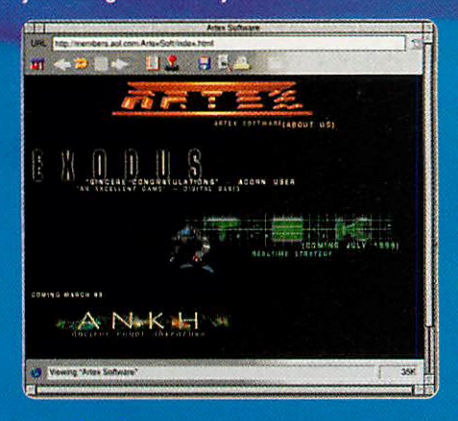
Games update






Are Artex about to conquer the Acorn games market? **Steve Mumford** reports

A few months ago, Artex Software created a great deal of excitement with the release of *Exodus*, a game of territorial conquest among the stars. This looks set to continue, as the team have revealed details about their next two planned productions. Thanks to Jan Klose, I can present you with information directly from the team itself. Are you sitting comfortably?

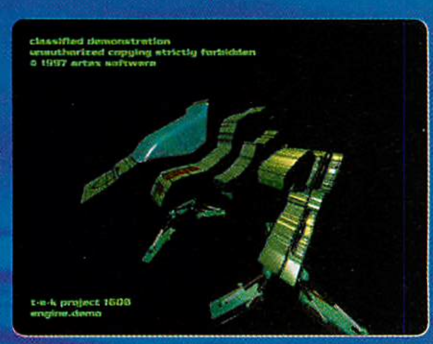


## Antics in Egypt

The earlier of the two releases, named *Ankh* and provisionally priced at just £20, is set to appear in March or April and takes the shape of a point-and-click graphical adventure game set in ancient Egypt. Using an engine similar to those at work in titles like *Simon the Sorcerer*, Artex's CD-based offering will treat you to high-resolution graphics and high quality sounds. Apparently, the game engine has already been completed and Artex are now working on the graphics. By the time you read these words a demo should be ready, so keep your eyes open.

## Network play with TEK

The other product in development is of quite a different nature; *TEK* is described as a 'real time strategy game' and is hoped to become the *Command & Conquer* of the Acorn world.




A preliminary shot of one of the many craft available in TEK

The release strategy is particularly interesting – the first version will arrive in July and will run on Acorn's NetStation, and this gives a hint as to what's to come. The game will support up to eight players across a local network or the Internet, so if all goes well, *TEK* should become a flagship game for the network computer.

The Risc PC version will be released later on in the year, around September, and will feature the multiplayer support of the NC version as well as higher resolution graphics, CD-based music and clips combining rendered animation and real video footage. As a means of demonstrating their commitment as well as giving a flavour of things to come, Artex are set to release a 30 second video 'trailer' in the immediate future, showcasing the techniques they're employing as well as the game engine itself.

This should boast some innovative features, including the ability to view several areas of the battlefield at once using a multiple window approach. Although it's not complete, I'm told that the engine is currently running at 50 frames per second at a resolution of 800 by 600 pixels on a Risc PC – hopefully Artex will be able to maintain this sort of speed as more elements are added.

I'm eager to take these two products for a spin – if the Artex team can stick to their ideals, we've got a lot to look forward to. Artex Software's website is stored at *http://members.aol.com/artexsoft* and as well as holding technical specifications for the games mentioned above you'll also be able to read snippets from the team's development diaries. For more information you can e-mail them by writing to artexsoft@aol.com

As well as working on the above titles, Artex have released a German version of *Exodus*, which is being distributed by ACE at a price of 69DM. They're also selling the English version, but only in Germany. On a related note, if you're finding *Exodus* to be a little too challenging and some additional hints are required, Alasdair Bailey has compiled some information that should be able to help you out.

Built-in cheats, modules, strategies and saved game files are all available – but the site was under construction when I looked so be prepared to delve around. The URL *http://www.argonet.co.uk/users/alib/* is a good place to start, the Exodus information is available under the 'Features' link. You could also try accessing Tim Fountain's Web pages at *http://www.markgf.demon.co.uk/* – he's in the process of constructing a frequently-asked questions list, so send him those that are on your mind or browse through the ones he's already answered.

## And finally

David Sharp, author of the Acorn Emulation Web pages reviewed a couple of months ago, has asked me to mention that his site is on the move to a better server. If you would like to update your bookmarks, David advises you to use the URL *http://www.come.to/emulate* as this will always be correct no matter where the pages are stored.




David Sharp's Tellomere – progressing steadily

David's also writing a strategy game named *Tellomere*, and he's updated and moved the associated Web pages – they're now based at *http://www.geocities.com/SiliconValley/Park/4119/tellomere.htm*

That's all space will allow for this month – there'll be more essential information next time round, including details on the forthcoming port of id's classic game *Doom*. See you then.

# SHOW

**Graham Nelson** failed his wizard proficiency test, again

This is my second go at Fantasia Software's *Wizard Apprentice*; we received a preview copy a while back. I expected to breeze through the puzzles I'd already seen but, no. Each level has its own little knot of logic and it's tricky enough trying to remember what you already know about the current one.

I started by muttering aloud: "There's no way either player can gain height except by a ladder-piece, and the only one you can get back from is over there, so you have to do *that* shadow first...", and ended up drawing sketches on scrap paper. I am still utterly stuck at level 27 (of 100), which I maintain is impossible. But then I said that about at least five of the others.




*Wizard Apprentice* is a strategy game; nothing moves unless you move it. You play the apprentice, drawn something like a puppet from Dutch children's television. It is the day of your big test and you are equipped with a magic wand like a toffee apple and the sort of hat that folk bands wore in concert in the sixties. (Actually, though, I liked the graphics, which were both chunky enough for clarity and unusual enough to be entertaining, with pleasingly smooth animation and vertical scrolling.)

Your task is to collect flowers, mushrooms, levitating mushrooms, shadows, little atomic nuclei – the pictures change, but the basic problem is to collect between one and ten prize items from each level. The other game elements are: Ladder-pieces, which you can climb or walk through; boulders, which fall if not supported, and can be pushed if not obstructed; barriers which will never move; and crumbling walls which are destroyed if you walk into them sideways.

And that's all, until level 30, when a second player appears – a bouncing blue-green ball rather like the maddeningly playful alien pet from the film *Dark Star*. You can now switch control between apprentice and ball, who are on the board at once – which suddenly expands the possibilities. The wizard can push the ball about as if it were a boulder, then vice versa, and they can leapfrog each other. But now you have to worry about where both will end up after a complicated move. Boing, boing, dammit, start the level again.

Some of these levels I've started over fifty times, though more usually they take about five to ten attempts.

This is neat and simple, like *Tetris*, or *Minesweeper*, or *Sokoban*. It would be dull if the levels were thrown together lazily or at random, but actually they're satisfyingly well-designed – the opening few are a doddle, but the difficulty steadily ramps up. They come in groups of 20, and within each group you can solve the levels in any order – as mentioned above, I'm stuck on number 27, but have solved the other 39 of the first 40.

The curious thing about this kind of game design is that it really doesn't need any serious computing power. At a pinch you could code this up with character graphics on a Acorn Atom with 12K of memory. Looked at that way, *Wizard Apprentice* is indecently lavish. It runs off compact disc and occupies 185 *megabytes* – almost of all which is taken up with music, backdrop pictures and different pictures for the game items. (There are also occasional moments of plot between levels, such as when a giant snowman appeared and told me "Ha! ha!, you are no match for my powers" – just random intimidation, I think.) You'll need a Risc PC with a CD player; you can manage without a StrongARM, though there's processor-time for higher definition music if you have one. I find music about as much fun in a computer game as in a lift, so I turned it off, but it's actually not bad as game music goes. (It reminded me of the keyboard part to something by The Stranglers.)

For all the glossy extras, this is a basically simple strategy game with a clean, clever design. It comes with a level editor, and the only missing feature I would have liked is an "undo" button. But then I suppose the original sorcerer's apprentice would have said the same about the magic cauldron of porridge.

## Product details

| | |
|---|---|
| Product: | Wizard Apprentice |
| Producer: | Fantasia Software |
| Address: | Bill Kotsias, Vrioulon 1c, Nea Krini, Thessaloniki 55132, Greece |
| E-mail: | fantasia@hol.gr |
| UK distributor: | The Datafile PD |
| Address: | PO Box, Weston-Super-Mare, BS23 4PU |
| Tel/fax: | 01934 644046 |
| E-mail: | dave@datafile.demon.co.uk |
| Price: | £24.95 (inc) |
| Pros: | • Nicely designed<br>• A good simple game |
| Cons: | • Runs off CD (and doesn't play from the desktop)<br>• Level 27 |



**Dave Acton** and **Dave Lawrence** present a selection of your byte-sized delights

# star info

## System-atic clearance

**Author: Scott Boham**

*ClearSys* is a small utility from **Scott Boham** which searches through your system directory and tells you if any modules it finds have a different version number from the one currently loaded in ROM. If the version is older, it gives you the opportunity to delete the one stored on disc. Scott says this is particularly useful if you've just upgraded the OS in your machine.

It works by using a recursively procedure, *PROCscan*. This takes the name of a directory as an argument. It uses OS_GBPB 12 to enumerate the files within that directory one at a time. This returns useful things such as the object type, file length and file size. If the object is a directory, it recursively calls *PROCscan* to deal with the sub-directory. For files, it first checks if they are modules (file type FFA) and then calls a separate procedure *PROCcheck* to perform the check on the module version.

*PROCcheck* loads the file into a buffer, follows the 'help string offset' pointer (offset 20 from the start of the module) and extracts the module version from the string stored there. This should normally be in the form of <module help> <TAB> <version> hence the detection and skipping of 9's in *FNgrab_version*. It then uses OS_Module 18 to find the base address of the module in ROM, if, indeed, it is present. Another call to grab_version returns the ROM version number. These two numbers are then printed and compared if 'disc' is less than 'rom' then the option to delete is given.

## Five... alive?

**Author: Owain Cole**



Did you hear the MD of Channel 5 got married? The service went well but the reception was awful.

For some 'lucky' people, Channel 5 is a genuine option – but most of us are allowed only the mere hint of a picture appearing through the multi-coloured snow like some long lost ghost of Logie-Baird. For the latter group of people, **Owain Cole's** desktop silly will simply serve as a reminder of why they had to retune their video; while for the former it demonstrates what the majority of the population have to put up with!

As you may have guessed, *!Channel5* places a handy Channel 5 logo in the obligatory top left hand corner of the screen. An amount of 'fuzz' can then be selected from a menu. Unfortunately there isn't an option lower than 'hopeless'; so I can't really pretend with my desktop. Luckily C5 is also broadcast over satellite, so I *do* know what I'm missing.

Owain promises a follow-up application – *!Tuner* in the near future. This will instantly remove all the fuzz and allow you to select the 'good' option from the menu. Shame he can't add a 'program quality' option as well.

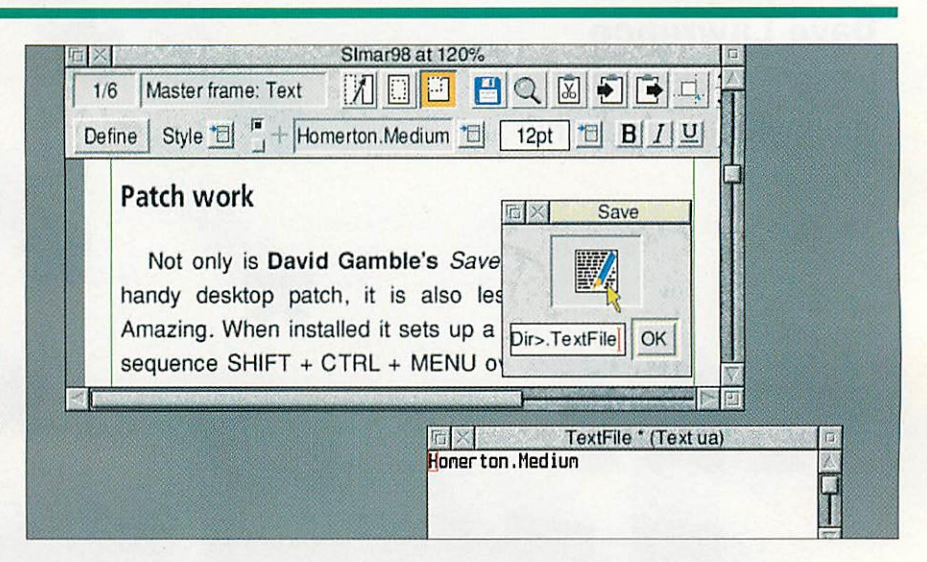
Anybody fancy writing a BBC logo straightener? Some examples of BBC 2 ident animation? A simulation of the original (and best) LWT logo?

# Patch work

Author: David Gamble

Not only is **David Gamble's** *SaveIcon* an incredibly handy desktop patch, it is also less than 2K long! Amazing. When installed it sets up a filter to detect the sequence SHIFT + CTRL + MENU over a writable text icon. It then pops up a save box and you can effectively drag the text out of icon and into an editor or a directory viewer or anywhere you can normally save a file.

The only downside seems to be that it can only save writable icons – this is where *SaveIcon2* comes in. (No sooner do we receive a desktop patch than we are already patching it ourselves!) Version 2 of the module has the icon type detection snipped out which means you can save the text from ordinary display icons, or indeed *any* icon, as well as writables.




# Close to the Edit

Author: Justin Fletcher

**Justin Fletcher** should not be a strange name to long time readers of *info. His latest submission, the concisely named, *EE*, provides a method for editing files from the command line. Instead of the 'normal' way that this might be done (using a full screen, single-tasking editor – e.g. pico), *EE* returns to the desktop and allows you to edit the file in the comfort of your favourite editor (so long as you like *Zap* or *StrongEd*!).

This may not seem useful at first, but if you want to automatically start an edit of a file from an Obey file or similar, then this is likely to be the only way you can do it (short of using the 'full screen' editors).

To use the program, simply place *EE* inside your Library structure and to edit a file type:

```
*EE <file>
```

This will attempt to use whatever editors are currently present to edit the file. If there are no editors capable of editing that type of file the editing session will abort and you will return to the command line. To force a file to be edited in as if it were another type, use:

```
*EE -t <type> <file>
```

where <type> is a three digit hex number. If you wanted, for example, to edit the !Boot.!Boot file on your computer you might use :

```
*EE -t FFF Boot:!Boot
```

Once in the editing session, saving or discarding the file will return you to the command line with the file updated or unmodified (respectively). If you run the command from within a TaskWindow the window will remain active, awaiting a key press or the return of the data. You can use R to forcibly return the updated data to the task, or A to abort. Escape will also abort the session.

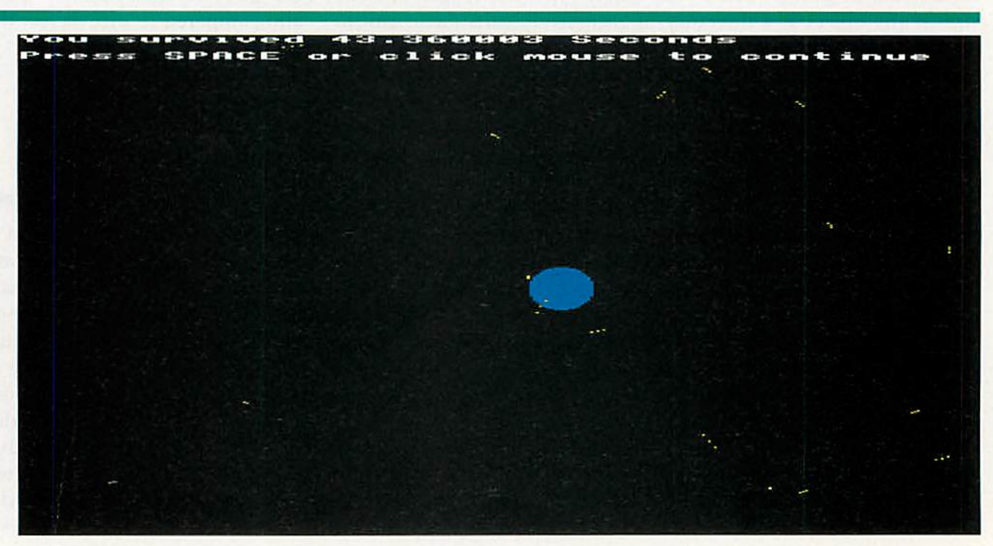
Note: It is not dangerous to close the task window, or kill the EETask task that starts as these will be trapped and dealt with accordingly.

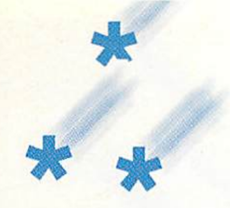
Justin says that although *EE* is quite small, it was quite hard to write – getting the interaction between command line and desktop is not trivial! If anyone is interested in writing similar such programs, he has provided some details in a help file accompanying *EE*. The source code is also available, but you will need his assembler, *JFPatch*, to be able to build it.

# One to avoid

Author: Tom Harrison

Our Gallery of the Small continues with a 1K game called *Avoid* sent in by **Tom Harrison.** In the game you are in control of a large blue ball and must avoid the small yellow things that fly in from the edge of the screen. The mouse controls the ball, but not directly – you impart inertia to it. The controls are quite sensitive, so go gentle to start with, also be careful of the edges of the screen – for one thing that's where those yellow things start from, but also the ball has a nasty tendency to bounce vigorously. We've only managed to stay alive for about 30 seconds. Pathetic eh?







# Mystic Rose

**Author: Michael Windsor**

You may be surprised, and quite possibly relieved to hear that this is not the sister of Mystic Meg. It is in fact one of the beautiful permutations produced by *!Patterns* – the work of **Michael Windsor**. Michael describes the background to his creation:

"*!Patterns* was written simply as an exercise in desktop programming. The algorithms for the 'Rose' and 'Epicycloid' section were adapted from some programs written by my Dad, Brian Windsor, some years ago in BASIC on the Beeb."

*!Patterns* produces four different pattern styles and outputs drawfiles which can be saved to disc or dragged straight into *Draw*. Choice of pattern and parameters is via a simple control panel.

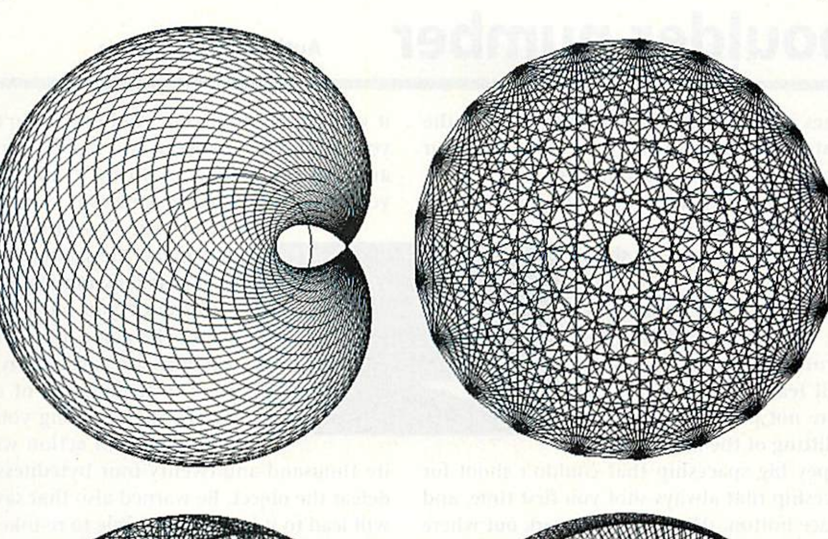
**Polygon.** "A regular polygon that fits in a circle of the given radius.

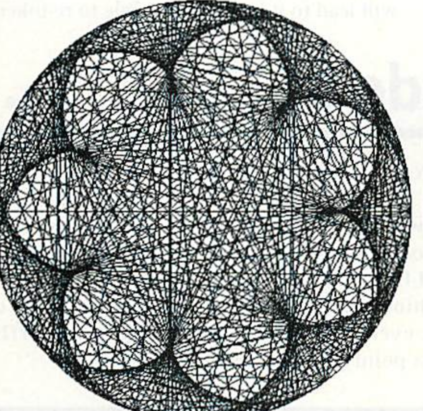
**Mystic Rose.** "Similar to the polygon, in that the pattern is produced from a polygon of the given number of vertices. Again, this fits in the circle of the radius specified but the pattern here is generated by connecting each point to every other.

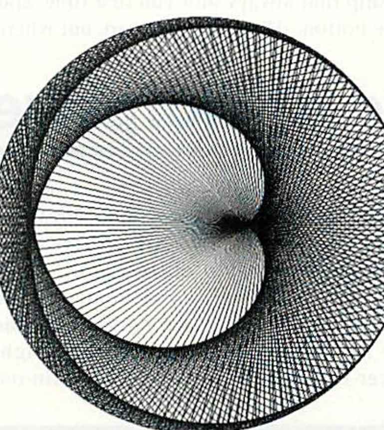
**Epicycloid.** "Again, produced by drawing lines between regularly spaced points on a circle's circumference. If we number each point around the circle, point n is connected to the point (loops + 1) * n. So, if loops = 1, point 1 is connected to point 2, point 2 to point 4, point 3 to point 6 and so on. Position numbers higher than the total number of points wrap around. Within the figure, a definite path can be traced out which loops around a number of times. This number is the value contained in the "loops" box.

"To make this pattern more general, I allow non-integer loop values, but use with care. The program traverses the circle until it has made a number of revolutions equal to the reciprocal of the fractional part of 'loops'. So, selecting a fractional part which has a very high reciprocal will lead to a high number of revolutions and a lot of lines. As a general rule of thumb, values such as "x.5" or "x.25" produce acceptable results. A fractional value with a non-integer reciprocal will produce a pattern that doesn't finish at the starting point.

"Technically, an epicycloid is the pattern produced by following a point on the edge of a circle rolling around the circumference of another circle, in much the same way as a Spirograph® works. The number of loops or *cusps* produced is therefore dependent on the ratio of the sizes of the two circles: Circles the same size will produce a single loop (the *cardioid*); two loops can be produced (a *nephroid*) by using a rolling circle of half the radius of the fixed one, and so on. Despite this nomenclature suggesting the lower numbers of cusps are perhaps more special than higher ones, some very interesting patterns can be produced using much higher numbers of loops, where the cusps of the envelope can barely be seen. Try 15, 60, 61 and 89.







**Limacon.** "The limacon is actually the shape of the envelope around the pattern of circles seen here. The pattern is produced by starting from a 'basic' circle and drawing a number of other circles with centres all on the circumference of the basic one. These points are all equally spaced, as before. Each of the secondary circle's circumferences passes through the 'focus'. This point lies on the x-axis, and the value given is a fraction of the radius of the basic circle, for example, 1.0 specifies a focus on the circumference of the basic circle, 2.0 twice as far from the centre of the basic circle as its circumference and 0.5 half way between the centre and the circumference. If 'Basic Circle' is selected, the basic circle will be drawn on the resulting diagram.

"The member of the limacon family produced when the focus = 1.0 is called a cardioid, because of its similarity to the heart. Another case worth trying is that of focus = 0.0 which produces a set of circles of all the same radius, and looks reasonably attractive. My sister said it would be good to colour in (she's 19!).

"I believe the limacon is the shape you may have seen when holding a mug or cup under a light – seen as a bright line across the bottom and sides of the cup. Varying the angle of the sides (thus varying the shape of the ellipse presented to the light source) changes the path of the line in a way that represents a change in the position of the focus in this program."

On the technical side there isn't much to add. Michael wrote *!Patterns* in C used GNU C and Desklib. It's his first desktop program, so hopefully we'll be seeing more great things from him in the future.

# Png revisited

**Author: Tom Tanner**

It seems that there was a small problem with the January cover disc, and the RunImage for **Tom Tanner**'s Png converter had be truncated to 0 bytes. We hope *this* month's disc fares better and we have included the latest version of Tom's program on it.

# Lurcock IPH

**Author: Pontus Lurcock**

*Lurcock IPH* sounds uncannily like some lethal bitter, drunk only by large-bearded CAMRA types over a game of pilliwinks and a ploughmans the size of a small town. In fact, the reality is very down-to-earth – IPH stands for 'Intelligent Pointer Hider' and 'Lurcock' is none other than our old friend **Pontus Lurcock.**

As the name suggests, it hides the mouse pointer when text is being typed, and is intended to be an improvement on the usual 'aagh, someone pressed a key, kill the pointer' approach. After all, the only time you really need the pointer hidden is when you're typing text into a document – not when you're typing into an icon, not when you press a key to close a dialogue box, not when you press shift to do a shift-double-click, and especially not when the pointer isn't obscuring your text at all!

With these considerations in mind, IPH will only hide the mouse pointer when all these conditions are fulfilled:

• The caret is active
• The caret is not in an icon
• The mouse pointer is over the window containing the caret
• A key other than Shift or Control is pressed

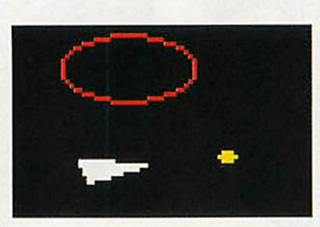
IPH was assembled with the aid of Acorn's *ObjAsm* and Julian Smith's *Makatic*. The source is supplied for the curious.

# Off-the-boulder number

**Author: Philip Mellor**

Another trip-of-ten-lifetimes into the virtual wonderland that is the home of what top scientists have come to call "the 1K game". Our interstellar guide is none other than **Philip Mellor** of Leeds.

*1K_Meteors* is a hand-crafted, lovingly-restored, 1024-byte version of that old favourite *Meteors* in which, well, meteors hurtle about all over the shop and you have to shoot them and/or get out of their way.



Control is simple enough: Move the mouse sideways to rotate your ship; use Select to thrust and Adjust to shoot. You score 50 points for every meteor destroyed. The full features of the original arcade (and Beeb) game are not present in this version. These include the splitting of the large meteors into smaller ones, the dopey big spaceship that couldn't shoot for toffee, the nasty little spaceship that always shot you first time, and the all-important hyperspace button. (How did that work out where it was safe to drop you? And why didn't it always work, squeezing you on occasion between two rapidly converging boulders?) Perhaps an industrious reader may care to add these features – we will allow you perhaps 2K to do so, generous as we are to the very last.

However, if you do yearn for those little extras that make the game, "try configuring your system beep to Percussion-Noise" says the man himself.

Those of you with fast machines may wish to doctor the game a little before playing, unless your reactions are particularly fruitfly-like in their rapidity. The turning off of caches, or the insertion of WAITs, may prolong your life a little, although the latter course of action will detract from the exquisite thousand-and-twenty-four bytedness of the program and thus defeat the object. Be warned also that saving the program from *Edit* will lead to it being impossible to re-tokenise.

# Accelerate to Worpswede 9

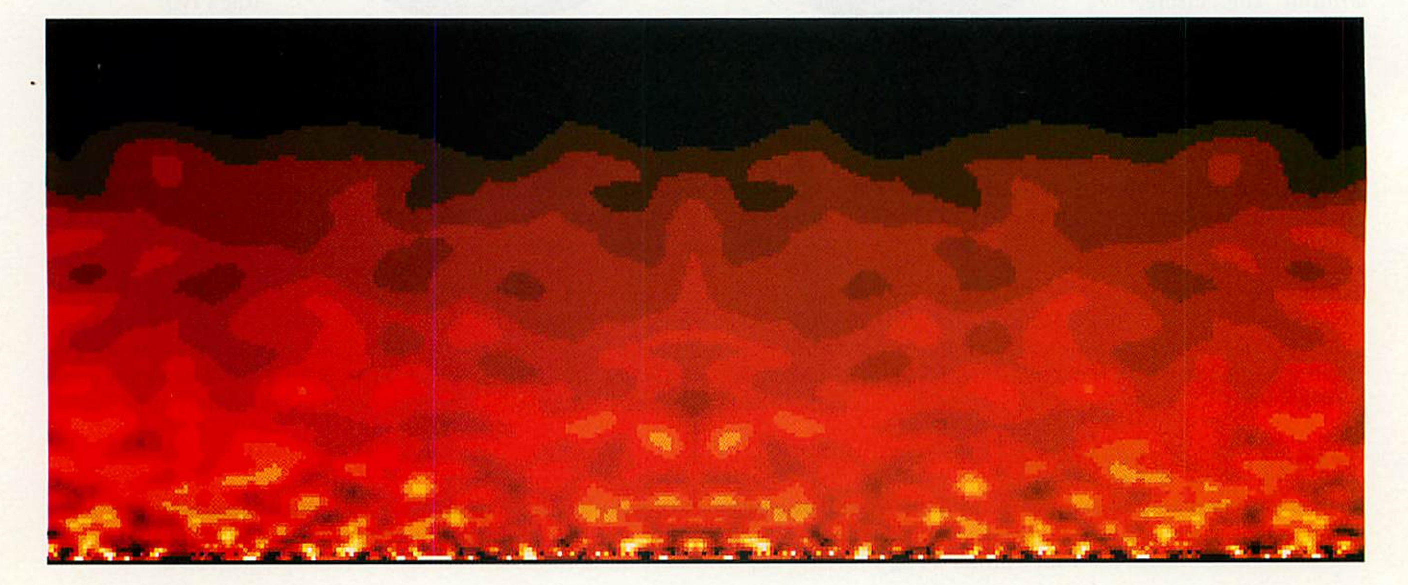
**Author: Dennis Ranke**

Well, as you may have gathered, the heading doesn't actually have a lot to do with the program, but hey, what's new? We thought it may be the only opportunity we might have to include the German town of Worpswede in a pun.

The town of Worpswede is the home of **Dennis Ranke** and by sheer coincidence, he is the very force behind the next program – *FireMC*.

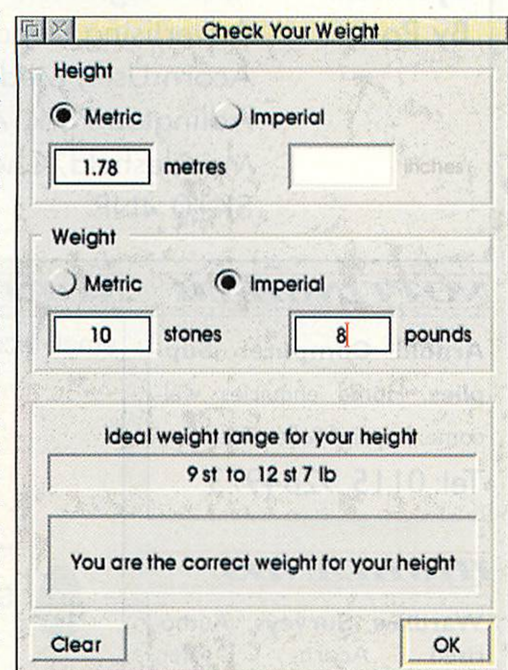
Now, there are two incredible things about *FireMC*. First of all, it is a fantastic come-home-to-a-real-fire simulation written entirely in machine-code. So realistic in fact, you might even be tempted to dangle a muffin on a pointy stick in front of your AKF60. If you were daft that is, and liked cold muffins.

The other incredible thing is that *FireMC* is a mere 256 bytes long. So we would have room for another 3199 of them on the cover disc, if it weren't already overflowing with software delights.



## Weight a second

Author: Jonathan Rawle




The first of three invaluable, and indeed, money-saving programs from **Jonathan Rawle** now. *!WeightChk* is simply "a computerised weighing machine". Simply enter your height and weight – you have the choice of metric or imperial units – and the computer will tell you if you are under-, over- or just-the-right-weight.

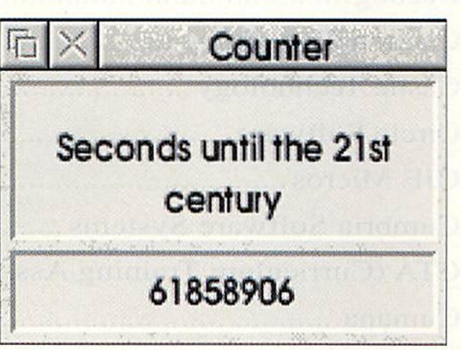
Jonathan admits that the formula used by the program is rather simple, taking no account of age, gender or local gravitational conditions. As he points out though, "it certainly saves having to spend your loose change at the railway station."

## Millennium submission

Author: Jonathan Rawle

There will no doubt be a lot more talk of millennia over the coming couple of years, and probably a lot of millennium-related submissions. We are proud to bring you our first – *!Counter* – by **Jonathan Rawle.**

*!Counter* simply tells you how many seconds you have left before the next millennium. It is, I suppose, the ultimate 'mug-watch'. In fact, the program is configurable and can count down to any future event in a choice of steps. Select the *Setup* option from the menu to open the Setup window.



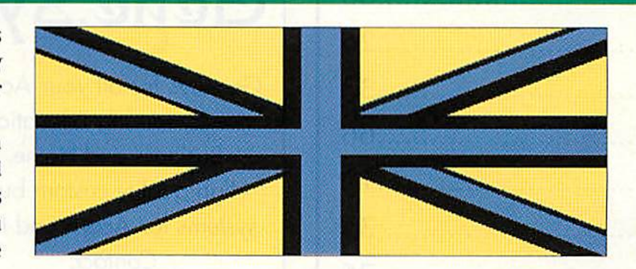

Now enter the time and date of the event, and specify the steps in which you want to count down to it. (You can also show how long has elapsed since an event in the past.) Enter an appropriate description in the icon provided and this will appear in the *Counter* window. Use the *Save setup* option on the menu to commit your changes to disc, and copy the application into your *!Boot.choices.boot.tasks* if you would like it to start counting as soon as the machine is booted.

As Jonathan points out, "the program is only as accurate as your computer's clock. Use *Alarm* to set the clock accurately."

## Flag on the wall

Author: Jonathan Rawle

**Jonathan Rawle**'s final offering is a simple optical illusion. Run *Flag* and stare at the image produced for 10 to 20 seconds.



Then stare at a blank wall, after a short time the Union Jack should appear in all its (normal) glorious colours. This may not work if you are colour-blind, but in such a case the version on the screen might look right in the first place. Also, if we have been careless enough to display the flag upside down, please don't write in – instead, post your comments to the Internet newsgroup alt.flags.inverted.sad.people where there will be warmly received.

## *QUIT

All submissions, (no larger than 100K please) to:

*INFO, *Acorn User*,
IDG Media, Media House, Adlington Park,
Macclesfield SK10 4NP

or, if your submissions total 100K or less, e-mail us (including your real address please) at:

*austarinfo@idg.co.uk*

You needn't include a letter but please put your name, address and program title on every disc and include a text file containing your name, address, disc contents and program details. Any additional information is always welcome. An SAE will ensure your discs are returned. As always, only *info submissions please.

## Compatibility table

| Program | ROS 2 | ROS 3.1 | ROS 3.5+ |
|---|---|---|---|
| ClearSys | No | Yes | Yes |
| !Channel 5 | Yes | Yes | Yes |
| EE | No | Yes | Yes |
| Save Icon | No | Yes | Yes |
| Save Icon 2 | No | Yes | Yes |
| Avoid | Yes | Yes | Yes |
| IPH | No | Yes | Yes |
| 1K_Meteors | Yes | Yes | Yes |
| Fire MC | Yes | Yes | Yes |
| !Counter* | No | Yes | Yes |
| !WeightChk | Yes | Yes | Yes |
| Flag | No | Yes | Yes |
| PNG2SPR | No | Yes** | Yes |
| Patterns | No | Yes | Yes |

* Needs BASIC64
** Needs Toolbox

# ACORN USER ADVERTISERS INDEX




**See The Acorn Software Guide on Pages 76 & 77**

I came across a novel demo protection system this month. Normally demos are fully fledged applications where some vital part has been disabled (I have sometimes heard this referred to as cripple ware). Normally it's the save option that gets clobbered, allowing you to see and use all the features of the application but not preserve your work.

This application, however, allowed you to save your work but not load in any saved files, only the demos. On the face of it this seems to be the same thing but, thinking about it, it's a great incentive for the user to purchase the full package because they will have access to their past work. Any application developers out there should seriously consider this approach – I think it's a winner.

I came across this on the Internet and, as a lecturer in Physics, I thought it was quite amusing: *A lecturer asked a student which is faster, sound or light, and why? A wonderful student answered, "Sound because when we turn on the TV we get sound at first!".* The story is probably not true as it's a strange combination of inventiveness and ignorance.

*Crispin Boylan has a hankering after ancient technology, he writes:*
**I'm really interested in building some stuff for my old Beeb, but the articles I want to build, the Real Time Clock and the text for the PSU For Disc Drives, are not on the site. Can you make them available?**

All right, just for you these have been added to my http:///physics.mmu.ac.uk/Physics/Acorn/ website.

Incidentally, the reason I haven't put some of my oldest articles on the Web is that they were written on an old Tandy TRS80 and the diagrams hand-drawn. Therefore, I have to scan them in, use a optical character recognition program to turn them into text, correct any mistakes, scan in the diagrams, assemble them into one image and convert to TIFF. This takes about half an hour per article so unless someone specifically wants a particular article I tend to leave them mouldering on the shelf.

*Martijn van der Mei sent me another plea for a printer driver:*
**I'm desperately looking for a printer definition file as used by !Printers, which supports the Canon LBP8 III Plus (or anything else which can create CaPSL printer codes).**
**On the July 97 cover disc of *Acorn User* we included a set of the latest Acorn printer drivers, this particular printer was included. For the latest printer drivers see the Acorn website.**

*S. Antczak from Oxted gives a rather novel solution to a recent problem:*
**I, or rather my brother (who is to computers what The Spice Girls are to classical music), have experienced exactly the same problem described in the final question aired in the January 1998 issue of Acorn User, namely the screen splitting, one third to the left and two thirds to the right with wavy lines evident on the picture. At first we blamed a noisy game my young nephew was rapidly becoming expert at but no number of CMOS RAM resets with Delete power-on would permanently cure it.**

**As soon as the screen mode was changed back to 800 x 600 x 32K colours the problem returned no matter what program was being used. My next move was to remove, inspect, clean and replace the SIMS, the video RAM, the video digitiser card and every other unpluggable or removable part I could find. Still the problem persisted.**

**Having failed miserably to do anything useful to help my brother he finally resorted to bundling up his Risc PC 600 and AKF60 monitor, and driving it to his local Acorn Dealer. He related the story but, predictably, it would not misbehave for them. The dealer decided to keep it for observation and turned it on every day for a week. Eventually they concluded my brother was losing his mind. To give them their due, they didn't charge a penny for their efforts and what's more the computer has behaved perfectly ever since – which is more than a year now.**

**I related this tale to a colleague who smiled and told me how his father, a retired BT engineer, often found problem telephones, fax machines and answer phones were miraculously repaired by the time he got them back to the workshop. In time he became quite an expert at recognising faulty telephones as having "one mile faults" whereas the fax machines had "five mile faults." His rule of thumb was, the more complex the apparatus, the longer the drive needed to fix it.**

**He became the only BT engineer in the area who promised to have it back and working within the hour. And he did! My brother's local Acorn dealer was an 18 mile drive so from this we can draw two conclusions. Firstly, if your computer won't behave itself take it for a nice long drive in the country and secondly, a Risc PC 600 is about three and a half times more sophisticated than a fax machine.**

Personally, I usually resort to the laying on of hands method of fixing equipment that works 90 per cent of the time. A further 9 per cent of problems can then be cured by approaching the equipment with a screwdriver and a "I mean business" look in the eye. That leaves the remaining 1 per cent of faults when there is actually something wrong.

*Maurice Hendrix whose e-mail tag line is "Bad Idea (TM) is a trademark of Microsoft Corporation" wants to know a bit more about one of my projects, he writes:*
**I've read your articles on Remote Imaging in the recent issues of Acorn User. I've been interested in Remote Imaging myself for quite some time, dreaming that one day I might be able to receive live images from space.**

**Your articles have given me a great project to work on. Thanks! I've been studying the interface's electronic schematic in the first article.**

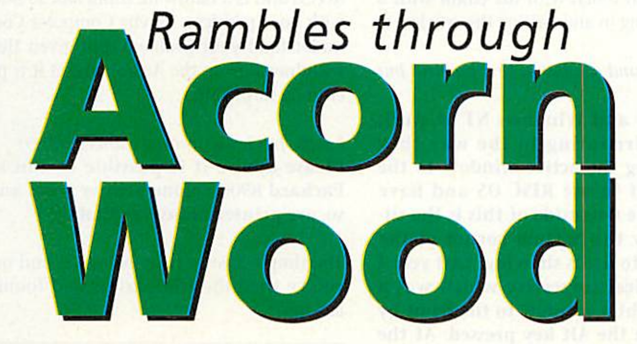
- **Do you happen to have a PCB design for the interface? It could save me a lot of time.**
- **The interface needs several different voltages supplied. Where do you get the power from? Do you get it from the computer or do you have several power supplies added to your setup?**
- **It is not entirely clear to me what the three variable resistors do. How do I determine what the best setting of each resistor is?**
- **I'm thinking of using my (currently dormant) A5000 to do the preprocessing and to use my Risc PC for post-processing. Is there a simple way to find out if my A5000 can cope with the data flow?**
- **Is it possible to use the computer's clock in some way to replace the oscillator?**

Unfortunately there is no PCB board for this interface. Unless I can guarantee to sell about 50 boards, or have an unrealistic selling price, I actually lose money, not to mention the time it takes to lay out the board, make a prototype and then correct the mistakes that inevitably creep in.

In my workshop I have several stabilised adjustable power supplies and I work with those when I am designing a project. I try to stick to what can be extracted from the computer but this is sometimes not possible. Most models of Acorn computers have a +12 volt and some sort of negative supply fitted internally. What you can do is to get some simple voltage regulator chips and adapt these for a specific project.

Failing that I find that the battery eliminator type of power supply sold in most electrical retailers are much cheaper than anything you can construct yourself. However, these are not too stable, often giving much too high a voltage when not loaded. Therefore I combine these with voltage regulator chips to give the voltage I need for any project I am going to keep permanently. As to the variable resistors in the circuit, I am sorry I forgot to explain them.

The 10K pot is used to trim the tone detector circuit to the 2400Hz tone, adjust this so that the LED is on during reception of the satellite signal. The 22K pot controls the gain of the system, adjust this so that when you look at the histogram of the image you get pixels over the whole range of values, this pot adjusts the top range of values. On the other ➤




Another question and answer session with **Mike Cook**

# Rambles through Acorn Wood

hand, the 47K pot, labelled black level, controls the value of the minimum pixel values. Obviously these two controls are related, adjust the black level first so that the blackest value is not used, then adjust the gain until you get the full range. After that you might find that the black level needs tweaking again.

However, don't worry too much as long as the histogram is about 5 per cent from the end-stops, any further improvement will be hardly noticeably. I have not tried the interface on older slower machines but providing the preview option is turned off I am sure it will cope as the code is written in machine code and even the old Model B would cope with that.

Finally, I don't think you can use the computer's clock to replace the crystal oscillator as the frequencies are very different and it would be very tricky tapping off a signal to divide down without upsetting the computer. The divider chain you would have to use is likely to cost nearly as much as the £3.50 the crystal oscillator costs. Finally, due to temperature changes inside it, the computer is likely to be less stable than we need.

*Ken Laidlaw made a profitable visit to a car boot sale, he writes:*

**I recently acquired an A3010 machine with monitor. It worked, but there was part of a floppy caught in the drive, I took the machine apart and made the repair. When I put the machine together, it did not function properly. I get the purple then blue screen, then just a black screen with, RISC OS 1024K, and underneath this all there is is Supervisor and a cursor. Have I blown the ROMs, or worse?**

If you are getting any text at all displayed on the screen, the computer is 99 per cent working so don't worry about having blown anything up. It could be that the parameters stored in the real time clock chip might need refreshing. You can do this by holding down the R key while turning on the computer. This sets the parameters to their default values.

*A month or two back I asked for some comments on PIC projects, well Ashoke P. Patel has written to say:*

**While I would welcome further projects using this microcontroller, (which would allow me to use the programmer I am building), my preference would be for microcontroller projects which made more use of my Risc PC.**

**The PIC seems to be designed primarily for standalone applications, which makes me wonder whether there is an alternative chip better suited to interaction with other microcontrollers and desktop machines. I would ask you to consider a project which allows a group of microcontrollers to be linked together and to a Risc PC with some type of simple network. This approach would allow the design of a series of projects which can be used either stand alone or linked together with others and a desktop machine. I have to admit that my knowledge of microcontrollers is limited to the PIC, however providing a simple network system (based on, say, an RS232 card) is feasible, a very versatile expansion-come-controller system for the RISC PC could be built. Am I being too ambitious?**

There is an application note on the Net describing a network of PICs but basically these are just joined together using a serial link, that is TTL level signals not RS232 level ones. The only problem with this is that you have to know what distributed application you are trying to solve as you can't go around sending software to a PIC.

This is because, like the StrongARM, the PIC uses a Harvard architecture that separates program code and data, there is simply no way to receive a byte and then execute it as an instruction. I did see a project where the PIC was used as a programmable controller, but there the chip was running a sort of macro interpreter that took a received byte and executed a corresponding predefined subroutine.

It is true that the PIC is designed to be used in what is known as embedded designs, that is dedicated circuits. In effect you throw away the flexibility of a programmable machine in exchange for low cost. There are many processors out there that would be better employed in networked distributed systems but you have to be very precise about what you want them to do before you design your system.

*He also has a supplemental request:-*

**On the subject of networks, magazines seem to shy away from detailed articles on this topic, and most of the books I have seen seem very impenetrable. I think that the extended series of articles on programming in C (many thanks to Steve Mumford), shows it is possible to tackle a complex subject in a magazine. A series of practice articles on network hardware and protocols would not go amiss.**

Point taken but, unlike C programming, networks can be complex as you have seen from the impenetrable nature of the books you have seen on the subject. Most users just want to use it – and knowing the protocol isn't going to help them! One of the best ways of generating research papers nowadays is to invent a protocol and run a simulation to see how it behaves. It is the simulations and predictions that gives rise to some of the more difficult maths in books about this. However, if anyone wants to tackle the topic please get in touch with the editor with a proposal before delving in and writing the articles.

*Mr J C Greenwood found a solution to a problem but then lost it:*

**I use Windows 3.1 and Windows NT at work and I find them irritating in the way they automatically bring the active window to the front, it is a relief to use RISC OS and have things stay put. The downside of this is the situation where only the bottom corner of the window you want to use is showing. Last year I came across the ideal corrective which was a module that brought a window to the front by clicking on it with the Alt key pressed. At the time I tried to put it into the Boot but it didn't work. Since then I've upgraded things and lost it. Where can I find this or a similar program? How do I include it in the Boot sequence? Why isn't a feature like this included in RISC OS? Is there a simple guide to how the Boot sequence works? For example what is the difference between PreDesk and all the other directories?**

**Another difference which is, surprisingly, not that annoying is the different configuration of the delete keys. Here I think the RISC OS (and UNIX?) is wrong and effectively wastes a key (why?). Before my upgrade I had a patch installed which made it conform to the PC but it did not work for all the packages I was using. Is there a patch that gives a total change?**

Criticising Windows is one thing but criticising Unix is quite another! It's not only Windows but the Mac does this as well, I put it down to being designed by pushy Americans rather than the naturally reserved British, "Are you sure you really want me?" The application you are looking for is by David Walker and featured in the June 97 issue of Acorn User in the *INFO section. It is called AltClick and if you click on any window while holding down the Alt key it will pop to the surface. This needs to be installed after the desktop has been entered so you put it in the !Boot.Choices.Boot.Tasks directory.

It will now automatically load in. If you put it to load in before the desktop is entered, the desktop initialisation will overwrite the patch and it won't work although it will be loaded. Basically the PreDesktop file is an obey file that is executed first, then the PreDesk directory holds files and directories that are run after that. Then the desktop is entered and stuff in the Task directory is run, a more detailed description was in last month's issue of Acorn User and there's more in this issue.

*Let's finish off with some problems I haven't got the answer for, maybe you know. First up is Bob Sapey:*

**I'd really like some information about problems with running Impression on a Risc PC. If I try to cut and paste from one document to another, I often get a Font error that results in it becoming corrupted and I have to reboot the machine. Computer Concepts simply say that they aren't planning to do anything about it but that it is caused by the DMA.**

**What I want to know is if anyone has overcome the problem and if not, do similar problems arise with Ovation? On a positive note, I have discovered that I can include angled text in an Impression document and edit it by using Tablemate. Probably not as good as doing it on screen but quite effective.**

As I understand it, DMA stands for Direct Memory Access and is a hardware thing and so nothing to do with your problem. Maybe Computer Concepts misunderstood your problem, but given their gradual withdrawal from the Acorn market it is perhaps not entirely surprising.

*Lastly, Jamie McCracken wants a driver:*

**Please advise if it possible to run a Hewlett Packard 890C colour printer from an A5000. If so, are printer drivers available?**

The simple answer is probably yes and no, I assume you've tried the 850C driver and found it lacking? AU

## Contacting me

You can contact me, Mike Cook, by post at the usual *Acorn User* address or by e-mail at: auqanda@idg.co.uk

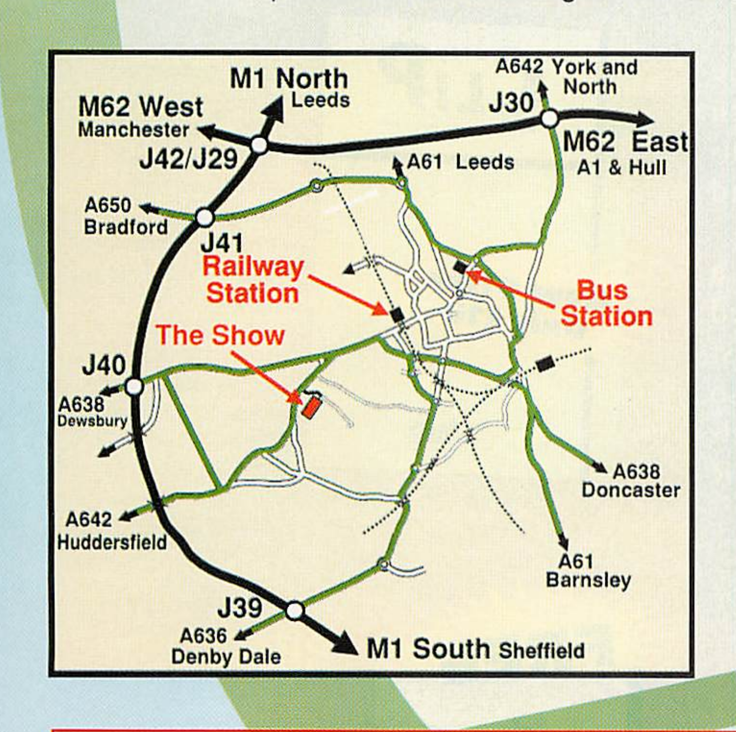



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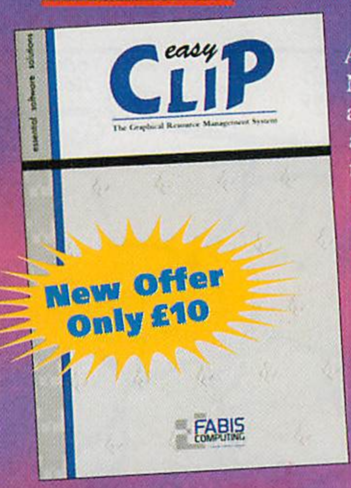
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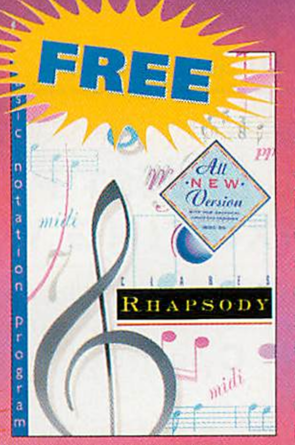
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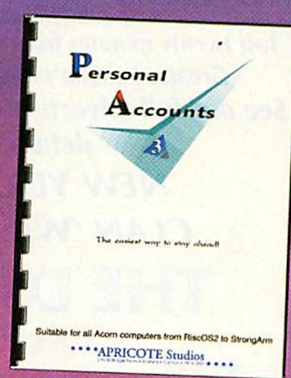
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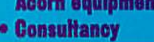


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# Feel the force

Mike Cook gets a kick

I have always felt that one of the great strengths of Acorn computers is that they are ideal to experiment with. Some time ago a student of mine constructed a two dimensional force feedback system for use in training surgeons in keyhole techniques and, while it is too complex for a magazine project, I wanted to be able to share the magic of force feedback. I mulled it over for quite a while and have come up with a one dimensional force feedback system.

The basic idea is simple. A stepping motor produces its maximum torque when it is at rest, so we can use the motor to increase the torque, or resistance to movement, and provide force feedback. My initial idea was a virtual screw – as you moved a handle the graphics of a screw would turn on the screen, and as it was screwed further in it became harder to turn. While developing this I found a simulation of hitting a ball with a bat much more satisfying.

As I said, a stepping motor can be used as the force feedback device, but you also have to monitor its position. I did experiment for some time to see if I could get the stepping motor to do this as well. Not many people know that if you twist a stepping motor by hand it generates pulses of electricity, enough to flash an LED. In fact if you connect the LED to a switch you can feed in the extra resistance kick when the LED is being lit. This is a great illustration to those who 'invent' a perpetual motion machine consisting of a motor powering a generator that powers the motor. It just can't be done, as the more current the motor takes out, the harder it is for the generator to turn and the more current the motor needs.

I thought it would be a great idea if I could use these pulses to indicate the position of the motor to the computer. Unfortunately it's not that easy. The pulses are easy enough to count, but it's sensing the direction of turn that I couldn't get to work reliably enough.

Therefore, I had to resort to another sensor to detect the motor's movement. This involved a bit of mechanical work with some plastic gears from a Lego set – shown in Figure I. Here there is a choice ➤

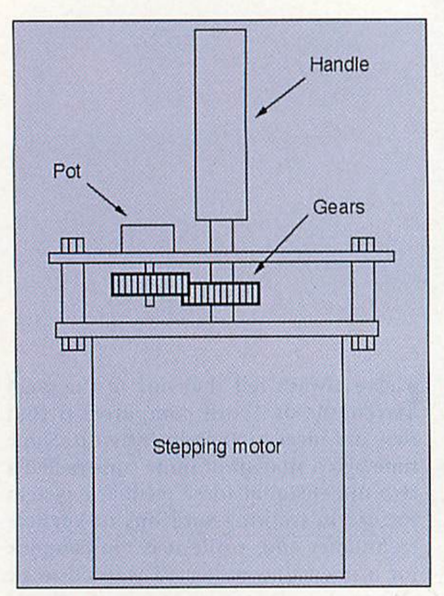


Figure I: The mechanical arrangement

of potentiometer – you can use a variable resistor of the continuous rotation type or a digital potentiometer. With a variable resistor you would need an A/D converter to read its position (there is one on my I²C interface card described in the December '95 issue of *Acorn User*). I chose to use a digital pot which is simply a switch that produces two quadrature signals just like a mouse. You measure the rotation by counting the number of pulses and the direction by noting the phase difference between the signals – this can all be done in software.

To drive the motor you need to be able to give it a kick of torque. I found that a motor presented the minimum torque when all the coils are energised. With all the coils off there was considerably more resistance to turning the motor. Therefore, the strategy is to have all the coils turned on and when the feedback is required, to turn off two of the coils. I wanted to be able to vary the amount of torque so the coils had to be turned off gradually. This requires a D/A (digital to analogue converter) and, again, there is one on my I²C interface card. However, this gives an output of 0 to 5 volts and my stepping motor required more than that, so I came up with the circuit in Figure II.

The idea is that the transistor acts as a voltage follower. The voltage on the emitter will be the voltage on the base minus about 0.7V, so the emitter resistor was chosen so that it develops 4.3 volts across it when the maximum current flows through the coil. My motor had a maximum coil current of 100mA which gave a resistance of:

$$R = V/I = 4.3/0.1 = 43 \text{ ohms}$$

However, this is not too critical and the closest standard value I had to hand was 33 ohms, so I used that. Now it does dissipate some power calculated by:

$$I * V = \text{Watts}$$

This turns out to be just over half a watt so I used 2 watt resistors to give me a bit of a safety margin.

So, when we have the full output of the D/A there is the full current through the coil, as the D/A output drops so does the coil current, thus increasing the torque of the motor. The other coils should also have the same value resistors in series so that when all coils are on, the current through each is the same, thus providing minimum torque. The transistors have to be able to handle the current and the power so I chose a BD135, but any similar transistor will do. So, with the D/A output connected to Figure II and the digital pot connected to bits 0 & 1 of the digital side of the I²C interface board, I set about designing the software.

One thing I noticed from my student's project work is that even the minimum amount of graphics help to enhance the experience of force feedback. What I needed was a good rendered screw, but alas none was to be found and my rendering attempts were not convincing. Instead I opted for a simple damped sine wave which looked more like a corkscrew than anything else.

I wrote a program that counted the pulses and so worked out the angle of twist and translated that into a 'screwed in' distance. As the distance increased the torque was increased, and it was decreased when it was screwed out. The results were good, but not as good as I had hoped for. One problem was that the digital pot could only detect 16 positions in 360 degrees and so the feedback was a little coarse. Also, as the torque increased you could feel the graininess of the stepping motor as you forced the permanent magnet rotor over the energised coils.

It was as I was experimenting with the screw that I came across the idea of hitting a ball. I calculated the velocity of the bat by the length of time it had stayed in the previous position. Then I imparted a velocity to the ball proportional to the bat velocity and also gave a pulse to the motors proportional to the velocity of the ball.

The graphics were very simple but it felt quite strange actually hitting the ball. I showed this at the 1997 Acorn World show and was quite pleased with the reception it got (the programs I used are on the cover disc). The only slight snag is that I developed them on a StrongARM Risc PC and so it might prove to be a bit slow on other machines – you might have to resort to a bit of machine code.

With any experiment there is always room for improvement. The simple demonstration could be developed into a full game with a proper spinning ball and a bat. Also, it would enhance the experience if the sound of a thwack accompanied the torque feedback.

Those of you who want to use a different interface could forego the proportional feedback element by attaching it to the printer port. You can use the two status lines to monitor the digital pot and the printer output bits to give the motor a kick. In that way you don't even need a bidirectional printer port. With the bat and ball I found that proportional feedback was less important than the virtual screw.

So there you have it, a taste of force feedback. No doubt it will be a standard feature in games consoles of the future but remember where you saw it first. AU

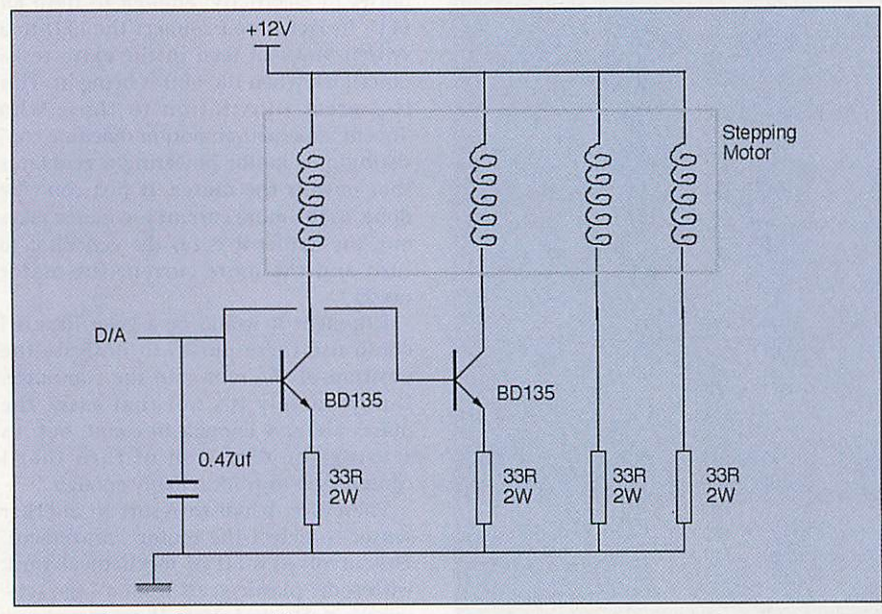


Figure 2: The Stepping Motor driver

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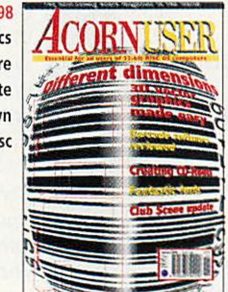
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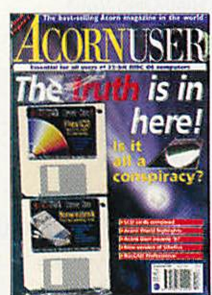
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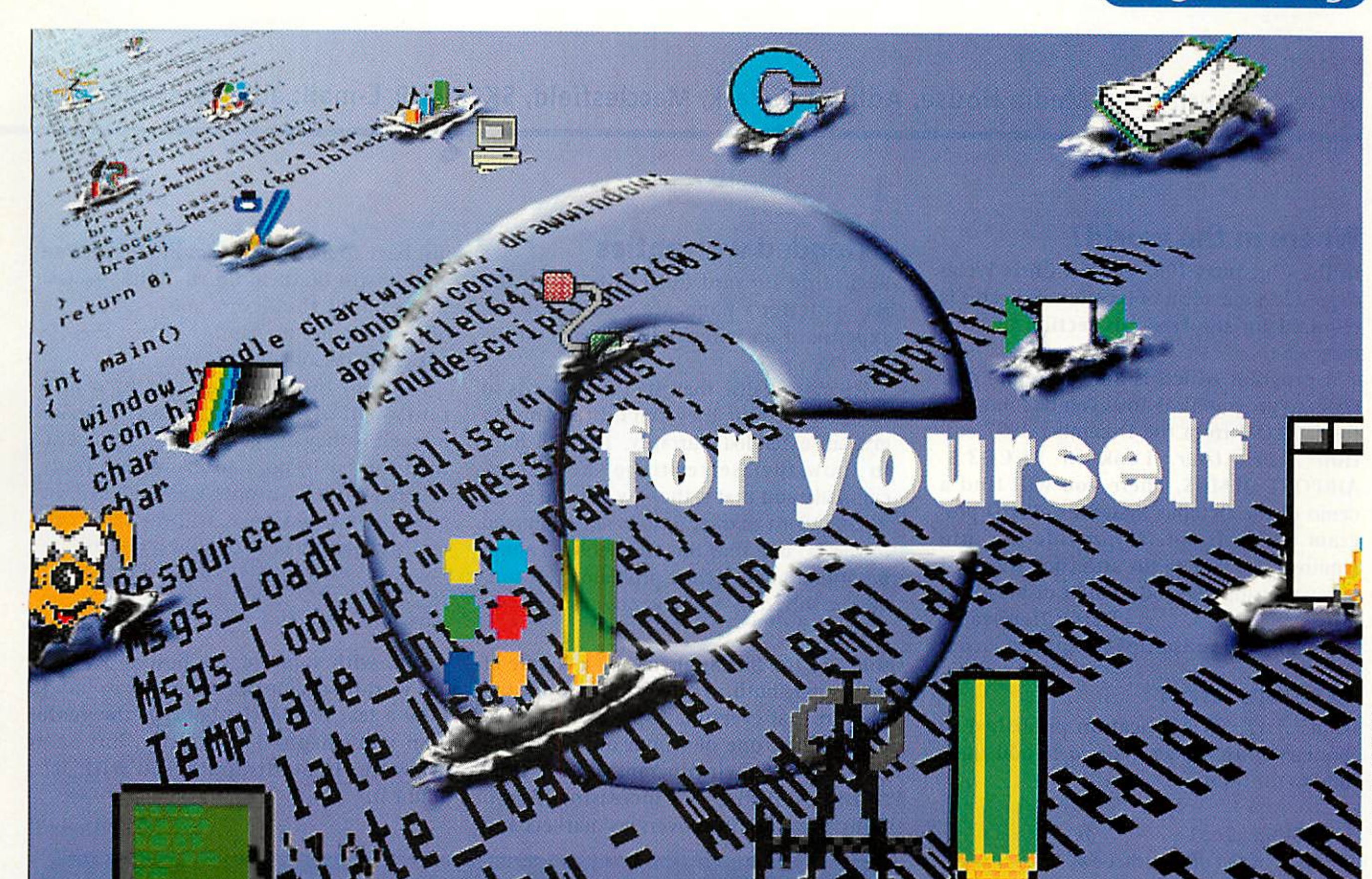
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JACK KREINDLER

# C for yourself

Aborting jobs and entering the printing loop – **Steve Mumford** explains

Last time round, I introduced the principle of using a structure of type **_kernel_oserror** to determine whether an SWI command had completed successfully; the **_kernel_swi** function returns a pointer to a structure of this type, so it's possible to test for errors in the following manner:

```
_kernel_oserror *ERR = NULL;
ERR = _kernel_swi(PDriver_DrawPage,
&in, &out);
if (ERR != NULL) {
/* Deal with the error */
}
```

If we haven't been given a pointer to an error structure, we're safe. On the other hand, if something has gone wrong, it's nice to know a little more about it: Here's what the structure actually contains, as declared in **<kernel.h>** – we're given the appropriate error number and associated zero-terminated string:

```
typedef struct {
int errnum;
char errmess[252];
} _kernel_oserror;
```

Assuming the error didn't occur in the middle of something critical, this information would enable the programmer to pop up a standard error dialogue box with very little work necessary, using one of the functions already set up:

```
au_report_error(ERR->errnum, ERR-
>errmess, 0, appname);
```

However, producing such an error window when we're in the middle of a print job could prove disastrous – if the error occurred during the **PDriver_GetRectangle** loop, it would probably compound the problem and destroy all hope of the program recovering gracefully. This is where we have to employ one of several escape routes.

## Aborting printer jobs

The SWI call that's most useful in this situation is **PDriver_AbortJob**; this command allows the programmer to pull the plug on a job before things get out of hand. The SWI should be called as soon as a fatal error has been detected, and before any attempt has been made to convey the message to the user by way of an error box. It takes one parameter, the file handle of the job to be terminated, in register zero – given this, the SWI will stop redirection of output to the printer and once you've closed the associated files, the program can continue. At this stage, it's safe to inform the user that something was amiss.

During the development of a program, the chances are that the programmer will come across the odd error that causes the printer drivers to go haywire; if this is the case, there's a 'silver bullet' SWI that will abort all active print jobs on the system. **PDriver_Reset** takes no parameters and, due to its somewhat ruthless nature, shouldn't be used in the normal course of events.

## The drawing loop

Now we know how to shut down the printer in an emergency, we can continue with the output cycle - having reached the stage of calling **PDriver_GiveRectangle** to define what output should appear on the printed page, along with any rotations or transformations, the next step is to call **PDriver_DrawPage** and enter the actual drawing cycle. The SWI takes four parameters, but only the first two are vital:

```
_kernel_oserror *ERR=NULL;
_kernel_swi_regs in, out;
in.r[0] = copies;
in.r[1] = (int) &box;
in.r[2] = 0;
in.r[3] = 0;
ERR = _kernel_swi(PDriver_DrawPage,
&in, &in);
if (ERR != NULL) {
/* bail out gracefully */
}
```

Register 0 holds an integer representing the number of copies you wish to make of the current page, and R1 points to a four-word block of memory that will hold the coordinates of the first rectangle the printer driver wishes you to print. R2 holds the number of the page about to be printed, and R3 points to a textual string representing the page number – these allow PostScript output to adhere more strongly to Adobe's guidelines, but if you don't wish to make use of them, setting both registers to zero will disable this function.

On return, if register 0 is non-zero, it indicates that the coordinates of an area have been placed in the block pointed to by R1 (low *x* and *y* coordinates first, followed by high *x* and *y*), and you should draw any objects contained within that rectangle. After this first round of plotting, the programmer should call **PDriver_GetRectangle**, with R1 pointing to the four-word block already in use.

It's essentially a continuation of the former SWI, setting R0 according to whether anything remains to be printed and returning another block of coordinates if appropriate. As soon as this call returns R0 with a value of zero, you should stop printing the current page and repeat the process from **PDriver_GiveRectangle** if you wish to print any more. Otherwise, a call to **PDriver_EndJob** with R0 set to the print job file handle, followed by the closing of the file itself, will bring the procedure to a close. AU

Write to Acorn User, Media House, Adlington Park, Macclesfield, SK10 4NP. E-mail: auletters@idg.co.uk

## Where in the world?

In the Christmas 1997 edition Chris Webb suggested some form of location indicator is required for the Free Ads section of your magazine.

A program which is able to relate dial codes to geographical areas can be found on the CD-ROM from the December 1997 edition *Acorn User*. Look in AUCD3.$. AIRPORT.DEMOS. There you will find a demo of the Octopus Systems *CallerID* program which is able to provide the info required. Just type in the area code and a list of towns using that code will be displayed.

**Robin Hounsome**
**robinhounsome@compuserve.com**

## ArtToSpr error

In my *ArtToSpr* application published in February's *Acorn User* I forgot to add these lines to the !Run file:

```
RMENSURE Scale      0.11
RMLOAD System:modules.toolbox.
scale

RMENSURE Scale      0.11
ERROR You need Scale 1.06 or
later to run !ArtToSpr
```

Causing "SWI &82C00 not known" errors if the Scale module has not already been loaded. Please add the above lines to the application's !Run file, adjacent to the similar lines.

**Tony Houghton**
**tonyh@tcp.co.uk**

## Excellent support

I recently upgraded my Risc PC to add a new Castle Technology SCSI card, plus hard disc and zip drive from Pineapple Software. The support I received from these two companies was first rate, after both the initial hard disc and zip drives proved to be faulty. I would thoroughly recommend both companies to anyone.

I use my Risc PC to publish a bi-monthly magazine called *Slingshot* (averaging 50 pages) for the Society of Ancients. The SoA is interested in the promotion of ancient/medieval history and has just contracted Oaktree to provide services for a new website – our current site can be found at www.dcs.ed.ac.uk/home/rjp/wg/soanc.html

**Michael Wasilewski**
**michael.wasilewski@lovellwhitedurrant.com**

## Extended warranties

Regarding Howard Cutler's letter in the recent letter's page. He points out the expense of an extended warranty on his Risc PC.

He must realise that the PC market is so competitive that they can't afford not to give an extended warranty. They all have to show themselves to be the best PC company and that is the way they do it.

The Acorn market is so small compared to the PC one that this free service cannot be offered. Any Acorn problems can usually be solved by a fellow Acorn user – you just have to look around on the Net and an answer will be there for you. The greatest thing about the Acorn market, that no other computer market has, is that there is a friendly person always there to help you.

I do not think that an extended warranty will attract people to the Acorn market. If they are going to buy an Acorn, then they will, no matter what warranty comes with it. It is only when other firms offer the warranty free, will the firms currently charging, have to offer it free too.

**Eytan Abrahams**
**eytan@thefree.net**

## Spending spree

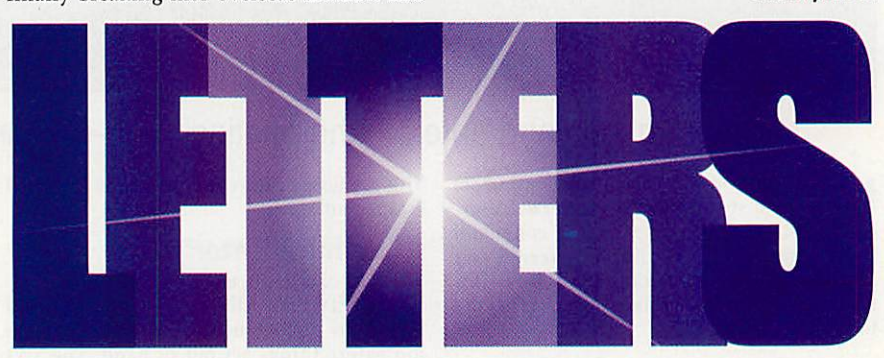
I would like to reply to the chap who kindly asked how successful the Glasgow show was for developers. I attended that show and the Birmingham one a couple of weeks later, both as a developer, I am sad to report that everyone I spoke to reported terrible sales, one of whom did not sell a single copy of their program. Why is this? With sales of Risc PCs increasing, Acorn finally breaking into overseas markets and the NetStation in Dixons, we should be experiencing a sales boom, but we are not. Maybe people are waiting for the RISC OS market to become secure again – it *is* secure again!

I saw people who did not own a computer show great interest in the NC and the J233 Risc PC – would we have seen that a couple of years ago? Maybe people are waiting for newer versions of software before buying. There won't be newer versions of software if there is not demand – developers are not charities.

I would suggest that we all buy a piece of software, it does not matter what, just invest some money in the platform. Acorn may not need the enthusiasts any more, but shops and developers do. We have a very powerful platform, with entry-level models starting at £269.99, it may not be made by Acorn, but that is a good thing, Acorn have never been able to crack into the home market, I suspect that NetProducts can, bringing an OS which is almost identical to RISC OS, to millions.

If you support developers, they will support you. RISC OS is the best OS in the world, with some of the best software in the world, why do we not want to buy it? Take a leaf out of the book of the gentleman who inspired this letter, buy some software, is he disappointed with it? I doubt it.

**Anonymous**




## A is for...

I fully agree with William Simpson in urging Acorn to advertise. In your reply to his letter, you said that any attempt to compete directly with PCs would be doomed to failure. I do not agree, though, that a comparatively small amount of advertising would be pointless.

Acorn say that, although their corporate strength is now in technology licensing agreements, their user base is valuable to them as it enables them to show potential partners that their technology is in widespread use. This user base is under threat. There are alarming signs of contraction in the Acorn world. Computer Concepts no longer supports *Impression*, a major dealer and advertiser in the north-west has gone into liquidation and other dealers are no longer supporting the Acorn market. Even Beebug now sells PCs!

One gets the impression that a lot of people are not particularly happy with their Wintel setup but use it because they imagine there is no alternative, other than expensive Macs. I promote the Acorn platform and RISC OS at every opportunity, but get the impression



that most people have either never heard of it or imagine it to be another PC clone. Those who are aware of it either imagine it to be a games machine or assume that it has no software.

You say that Microsoft are attracting the kind of attention that a ridiculously successful company acquires and which is trying to tear it down. Such attention does not put across the message that there *is* an alternative. Neither, I feel, does my word-of-mouth promotion, which is probably forgotten after five minutes.

A small amount of advertising by Acorn (not in the computer specialist press) would make some people stop and think, especially if it could show, say, an *ArtWorks* file being dragged into a DTP document and some superb typesetting coming off a printer. The point could also be made that, being a platform which has matured over 10 years, there is plenty of software.

The slogan could be – *A is for Alternative – A is for Acorn!*

**Martyn Fox**
**mfox@argonet.co.uk**

## Acorn 'wonder product'?

I would like to add to the letter by RW Jeffs, about the Risc PC II. He complains that he will not be able to upgrade to a Risc PC II – quite right too. The Risc PC was always touted to be super-upgradable, but this shows the truth. That is not my real problem, after all, can you upgrade most PowerMacs to G3? No.

And that brings me to the real issue – the new PowerMacs make StrongARM look a tad weedy especially without the FPU. These PowerMacs are more expensive, but not much. If the Risc PC II is released with a StrongARM at existing speeds, it will be like the Master/Compact all over again – Acorn releasing a 'wonder product' not much better than the last one.

RISC OS is without doubt the best mainstream OS, and MacOS is slow on even modern PowerMacs, but these days people accept that, and want pure horsepower. The Risc PC with one StrongARM will not deliver this and I cannot see people spending the extra over a normal Risc PC. Acorn make great innovations in fits and spurts. The StrongARM was faster than the PowerPC when it came out, it's not any more, in fact the G3 is quite a lot quicker.

Maybe ARM would be better to ditch Digital, they clearly are not making the same effort with StrongARM as they are with Alpha. This is a real shame, especially with the boom in interest in Acorn machines I have seen from first-time computer users at shows and in the non-Acorn press.

**Garry Taylor**
**xeev@netmatters.co.uk**

*One thing you don't have to worry about is the Risc PC II being slow – a low guestimate is five times faster than a current StrongARM Risc PC.*

## Air your views

**If there's something you want to 'get off your chest' or you have some interesting information for your fellow *Acorn User* readers, then write in to:**

**Letters page, Acorn User, Media House, Adlington Park, Macclesfield, SK10 4NP**
**or e-mail: auletters@idg.co.uk**

**Please note that we cannot guarantee a personal reply to letters.**

## Re: Barcodes (Jan 1998 issue)

Many thanks for Mike Tomkinson's praising article in *Acorn User* about my software *!Barcodes*.

One thing I must correct, however is that the hardware side of barcode reading is not a problem. These days you don't need software for barcode readers, since you buy the reader with dedicated in-built hardware which decodes the barcode.

It is simple with a Risc PC, since the reader plugs into the cable between the keyboard and the computer using a "keyboard wedge" – the number of the barcode appears on screen as though typed at the keyboard.

With older machines you use exactly the same bit of kit, but it plugs into the serial port. The only software you might require is a routine to grab input from the serial port.

Atomwide sell readers for the serial port with some Acorn software, otherwise Altek Ltd (01932 244110) or DED Ltd (01797 320636) sell just the readers. The latest Maplin catalogues have barcode readers as well, otherwise it is worth a browse through the small ads at the back of the larger PC magazines.

With any of the above readers, the barcode number is entered at the caret in a writable icon, so they may be used with existing databases or other software.

There really is no reason why Acorn computers may not be used for point-of-sale or any other barcode activity. Also I've been asked to point out by the Article Number Association (ANA) that it is not true that the prefix indicates the country of origin, merely an indicator of where the final packaging and marketing has taken place; also manufacturer numbers may now be more than five digits. Special literature for school children is available from the ANA direct.

Lastly, it is slightly misleading to say that "printing tolerances are wide". Every effort should be made to ensure that printed bar codes are within published tolerances. The *!Barcodes* software produces barcodes which are precisely to specification, however anyone producing barcodes should work with their printer to ensure that the finished result is to standard. Again, the ANA will be happy to advise.

**Kell Gatherer**
**Kang Software**
**E-mail: kang@locationworks.com**

*We also had a missive from the ANA directly, which has even more information for us:*

I read Mike Tomkinson's article on Barcodes with great interest. Although largely correct when discussing EAN-13 article numbers and barcodes, there are a number of errors which could confuse your readers when dealing with them in real life.

The principles of the EAN article numbering system, of which the ANA is the UK operator, is that the prefix 50 just indicates that the next group of numbers, the company prefix, was issued by the ANA. You will find many items in the shops manufactured in Britain bearing article numbers issued in other countries. For example, the European marketing centre for Coca-Cola is based in Belgium and all Coca-Cola produced in Britain bears a Belgian issued number beginning 54. The system allows every product in the world to be uniquely numbered, but as a marker for country of origin it is not and has never declared to be.

Secondly, a further principle of EAN numbering is that each number consists of 13 digits when including the check digit. There is no significance in the number, or its make up. It is simply an identifier as Mike Tomkinson describes.

Although it is currently true that the ANA issue 5 digit prefixes, this will shortly change and will range from 5-8 or even 9, as is already the practice of many ANA sister organisations in other countries. The barcode graphic should therefore show one box for twelve digits on the first row and not three boxes of 2, 5 and 5.

Our address is The Article Number Association, 11 Kingsway, London, WC2B 6AR, tel: 0171-836 3398, fax: 0171-240 8149 or e-mail: info@ana.org.uk Our website is also a valuable source of information to: http://www.ana.org.uk

**Graham Avory**
**External Relations Manager**
**Article Number Association (UK) Ltd.**





Dave Walker

I'm in a minimalist room, lying in a black leather reclining chair. It's a bit Freud, but I'm asking the questions. The room is Dave Walker's shrine to bachelorhood – and I use the word 'shrine' advisedly since I've met more than one impressionable young programmer who regards Dave Walker as a demi-god and is amazed that I know him.

Dave Walker – for those who need an introduction – is the Engineering Support Manager assigned to sales and marketing at Acorn. He also used to write the Acorn Customer Hotline for *Acorn User*, and at shows, although he is not necessarily in the spotlight, his presence is always felt.

'Whatever fame I have isn't deserved,' says Dave. 'I stand on the shoulders of giants (or hardware and software engineers), and they are giants who are approachable, easy going and don't seem to mind helping me answer the wackier questions that I sometimes cannot deal with. They have a better understanding of the hardware and software than anyone because they designed, built and wrote it. I only take what they have done and its documentation, and try to figure it from there'.

Dave thinks he's an 'old fart' on computer matters, clearly regarding it as a term of endearment. He does admit to being a '*new* old fart' though; one of the people who got into computing from 1978 to '85. If you start your computing career when you are 10 (often with a ZX81), then by the time you are in your late twenties in computing terms you are becoming middle-aged.

Dave has 'a view' on people starting now in computing.

'When I were a lad,' Pythons Dave, 'All you had was a command line and that was if you were lucky. None of these windowing systems, and computers had very little memory. They were not quick and to make them do anything elegant you had to understand them and get right down there at register level, and understand how many cycles opcodes took so you could shave them off the insides of your loops and get that extra iota of speed.'

'These days people are starting computing with too much power in their hands. It's OK if you want to just use the thing but if you want them to jump through hoops then you have to get down there; fortunately going down as far as the SWI layer is usually good enough.'

> **For some reason my brain and C do not go together that well**

'I started out with BASIC, graduated to Assembler then I learnt enough C to get by. I do not program from scratch – at the moment I just fix other people's. For some reason my brain and C do not go together that well. C – the core language – is fine, but once you start getting into all the libraries you have to read pages and pages of routines and for me, at the moment, it is just a bit too much.

'I have to get into Perl to get the NC server flying. Perl is the Web programmer's analogue to BASIC. If you want to be able to knock something together quickly you do it in Perl, and if you want it elegant Perl can still deliver. Last year Dave built and maintained the servers for the @the.mall, Acorn's equivalent of Radio One's roadshow. This left him exhausted so he went to a recent war zone to de-stress. No, honestly.

'I went to Bosnia. Visiting places like this does give you a different perspective on life. I visited villages where every wall was riddled with bullet holes at chest height. I had to refuel my car from camouflaged tankers; there would be army convoys, with my red Mondeo in the middle. As luck would have it, in Mostar I met some Scottish soldiers who gave me a wee dram of single malt.'

Dave likes his single malts. After a day at an Acorn show, he likes nothing better than working along the whisky shelf, trying every single malt in the bar. Besides Acorn computers, Unix and Silicon Graphics workstations, Dave's other lusts in life are fast cars and his Meridian driven rare Dali speakers. They did seem an improvement on my car radio speakers, and Dave explained why.

'They work on the principle of a full dipole configuration. The front is like a normal speaker but you also have acoustically transparent cloth on the back. This means you get sound from the front and sound out the back in antiphase. Effectively the room you have them in is the speaker box.'

He likes his music; the soundtrack to *Blade Runner* is a particular favourite, although his CD collection covers the musical spectrum from Bach to Bathory with occaisonal emphasis on Jean-Michel Jarre and Queensryche. But what would Freud make of his speakers?

**Jill Regan** AU




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# RiscPCs



Picture by Walter Briggs using Studio24Pro

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| Canon BJC5500 (A2) | £649.00 |
| Epson Stylus 200 mono | £139.00 |
| Epson Stylus 200 colour | £179.00 |
| Epson Stylus Colour 400 | £169.00 |
| Epson Stylus Colour 600 | £209.00 |
| Epson Stylus Colour 800 | £269.00 |
| Epson Stylus Colour 1520 (A3) | £729.00 |
| HP Deskjet 690C | £259.00 |
| HP Deskjet 870C | £369.00 |
| HP Laserjet 6L (laser mono) | £299.00 |

## Other Items

| | |
|---|---|
| Artworks video tutorial | £14.99 |
| Casio QV11 Digital Camera | £376.00 |
| Casio QV100 Digital Camera | £528.00 |
| Sibelius Junior v3.0 | £55.00 |
| Sibelius 6 software v3.5 | £115.00 |
| Sibelius 7 Student v3.5 | £459.00 |
| Sibelius 7 software v3.5 | £940.00 |
| Studio24 version 1 | £35.00 |
| Acorn Netstation (Ethernet) | £467.00 |
| Acorn Netstation (Modem) | £467.00 |
| A7000 upgrade to A7000+ | £249.00 |

***We have many items in stock which are not shown in this advert. Please ask for anything you require which may not be shown. We also undertake repairs and upgrades to all Acorn computer models. Collection can be arranged if necessary.***

## Pineapple Software

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**email:- sales@pineaple.demon.co.uk**
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